

State of Alabama Ambient Air Monitoring 2012 Consolidated Network Review



Table of Contents

Table of Contents.....	
Definitions and Acronyms.....	
Introduction.....	6
Public Review and Comment.....	6
Overview of Alabama’s Air Monitoring Network.....	6
Summary of findings of the network review	7
Population and CBSA.....	11
Types of Monitoring Stations	13
PAMS.....	13
SLAMS	13
STN	13
Supplemental Speciation.....	13
NCore.....	13
CASNET	13
Alabama’s SLAMS by Pollutant	14
Lead Network.....	14
Carbon Monoxide (CO) Network	15
Nitrogen Dioxide (NO ₂) Network.....	16
Sulfur Dioxide (SO ₂) Network.....	17
PM 10 Network.....	19
Ozone Network	21
Mobile.....	24
Montgomery.....	24
Tuscaloosa.....	24
Columbus, Ga.-Phenix City, AL.....	24
Birmingham	24
Dothan.....	24
Gadsden.....	24
Huntsville.....	25
Decatur.....	25
Florence.....	25
Auburn and Anniston-Oxford	25
Sites not located in an MSA.....	25
PM _{2.5} Network	26
PM2.5 Monitoring requirements for Alabama MSAs	29
Florence, Dothan, Gadsden and Tuscaloosa	29
Decatur	29
Huntsville.....	29
Birmingham	29
Mobile.....	29
Columbus, Ga.-Phenix City, AL.....	29
Montgomery.....	30
Auburn-Opelika and Anniston-Oxford	30
Monitors not located in MSAs.....	30

Quality Assurance.....	31
Monitoring Equipment Evaluation	31
NETWORK DESCRIPTIONS	32
ADEM.....	33
PM10.....	34
Lead.....	34
PM 2.5.....	35
PM 2.5 continued.....	36
OZONE.....	37
JEFFERSON COUNTY DEPARTMENT OF HEALTH (JCDH).....	38
ANNUAL AIR MONITORING NETWORK PLAN.....	38
Proposed Changes to the Network.....	38
PAMS (Photochemical Assessment Monitoring Stations)	38
NCore Ambient Air Monitoring Stations	38
School Air Toxics Program	39
SLAMS (State and Local Air Monitoring Stations)	39
Ozone	39
SO ₂	40
CO	41
NO ₂	41
Lead.....	41
PM ₁₀	41
PM _{2.5}	42
Continuous PM2.5 SPM (Special Purpose Monitors)	42
Manual PM2.5 STN Speciation Monitors and Supplemental Speciation.....	42
Network Review Findings	42
JCDH AIR MONITORING NETWORK DESCRIPTION.....	43
Ozone	43
Carbon Monoxide	43
Sulfur Dioxide.....	43
NO _y	43
Manual PM10 Hi-Vol	43
Manual PM10 Lo-Vol for PMCourse Determination.....	44
Manual PM10 Improve Monitor.....	44
Continuous PM10	44
Manual PM _{2.5}	44
Continuous PM2.5	45
Manual PM2.5 STN Speciation Monitors	45
Manual PM2.5 Improve Speciation Monitor.....	45
RadNet Monitor	45
HUNTSVILLE ANNUAL AIR MONITORING NETWORK PLAN.....	46
NCore Ambient Air Monitoring Stations	46
PAMS (Photochemical Assessment Monitoring Stations)	46
SLAMS (State and Local Air Monitoring Stations)	46
SPM (Special Purpose Monitors).....	48
Network Review Findings	48

AIR MONITORING NETWORK DESCRIPTION	49
APPENDIX A	50
Maps	50
ADEM Monitoring Sites	51
Jefferson County	52
City of Huntsville	53
APPENDIX B	54
Support for ADEM SO ₂ Sites	54
Wind Rose for Mobile, AL	55
Wind Rose for Tuscaloosa, AL	56
2009 Sources with Actuals SO ₂	57
Sources with SO ₂ Potentials >100 tpy	58

List of Tables

Table 1 - 2012 Alabama Monitoring Network	9
Table 2 - 2011 Estimated MSA Population	11
Table 3 - JCDH CO Monitoring sites	15
Table 4 - CBSA's PWEI and number of monitors required	19
Table 5 - APPENDIX D TO PART 58. PM ₁₀ MINIMUM MONITORING REQUIREMENTS	20
Table 6 - APPENDIX D TO PART 58. SLAMS MINIMUM O ₃ MONITORING REQUIREMENTS	21
Table 7 - MSA population with Current Ozone Design Value	21
Table 8 - Monitors with Ozone 2009-2011 Design Values	22
Table 9 - APPENDIX D TO PART 58, PM _{2.5} MINIMUM MONITORING REQUIREMENTS	26
Table 10 - MSA population with Current PM _{2.5} Design Value	26
Table 11 - PM _{2.5} Design Values per Monitor	27

List of Figures

Figure 1 – AL CBSAs and Counties	12
Figure 2 – Ozone Monitoring Requirements	23
Figure 3 – PM _{2.5} Monitoring Requirements	28

Definitions and Acronyms

AAQM	ambient air quality monitoring
AAQMP	Ambient Air Quality Monitoring Plan
ADEM	Alabama Department of Environmental Management
Appendix D	Volume 40, Code of Federal Regulations, part 58, Appendix D
AQS	air quality system
Avg	average
Bham	Birmingham
CBSA	Core Based Statistical Area
CFR	<i>Code of Federal Regulations</i>
CO	Carbon Monoxide
CSA	Consolidated Statistical Area
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
HDNR	Huntsville Division of Natural Resources
hr	hour
hi-vol	high-volume PM ₁₀ sampler
JCDH	Jefferson County Department of Health
Low-vol	low-volume particulate sampler
m ³	cubic meter
min	minute
ml	milliliter
MSA	metropolitan statistical area
NAAQS	national ambient air quality standard
NCore	National core monitoring (multi-pollutant)
O ₃	ozone
PAMS	photochemical air monitoring station
Pb	lead
PM	particulate matter
PM _{2.5}	particulate matter less than 2.5 micrometers diameter
PM ₁₀	particulate matter less than 10 micrometer diameter
PM _{10-2.5}	particulate matter less than 10 microns but greater than 2.5 microns
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
SLAMS	state and local air monitoring station
SO ₂	sulfur dioxide
SPM	special purpose monitor
STN (PM _{2.5})	Speciation Trends Network
TEOM	Tapered Element Oscillating Microbalance (Rupprecht and Patashnick Co.)
TPY	Tons per Year
TSP	total suspended particulate
URG	URG-3000N PM _{2.5} Speciation monitoring carbon-specific sampler
USEPA	United States Environmental Protection Agency
°C	degree Celsius
µg/m ³	micrograms (of pollutant) per cubic meter (of air sampled)

Introduction

In October 2006, the U.S.EPA issued final Federal Regulations (40 CFR 58) concerning state and local agency ambient air monitoring networks. These regulations require states to submit an annual monitoring network review to U.S.EPA. This network plan is required to provide the framework for the establishment and maintenance of an air quality surveillance system and to list any changes that are proposed to take place to the current network during the 2012 season.

Public Review and Comment

The annual monitoring network review must be made available for public inspection for thirty (30) days prior to submission to U.S.EPA.

For 2012, this document was placed on ADEM's website on June 1st to begin a 30 day public review period. This document can be accessed on ADEM's website.

Or by contacting:

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Overview of Alabama's Air Monitoring Network

Monitors in the State of Alabama are operated for a variety of monitoring objectives. These objectives include determining whether areas of the State meet the National Ambient Air Quality Standards (NAAQS), for public information (such as, participation in EPA's AirNow program), Air Quality Index (AQI) reporting for larger Metropolitan Statistical Areas MSAs, for use in Air Quality models and to provide data to Air Quality Researchers. Alabama monitors the six (6) criteria pollutants which have NAAQS identified for them; CO, Lead, NO₂, Ozone, particulate matter (PM₁₀ and PM_{2.5}), and SO₂. There are other non-criteria pollutants that are also monitored for special purposes (such as PM_{2.5} speciated compounds). In addition, meteorological data are also collected to support the monitoring and aid in analysis of the data.

In Alabama, the air quality surveillance system is operated by the State environmental agency and two local programs. The agencies are the Alabama Department of Environmental Management (ADEM), the Jefferson County Department of Health (JCDH), and the Huntsville Department of Natural Resources (HDNR). Each of these agencies has performed the required annual review of their portion of the current ambient air quality network and developed a proposed network to be implemented during 2012. This document is a compilation of the reports from each agency.

Currently, the Air Quality Index (AQI) is reported for Huntsville, Birmingham, Mobile, Montgomery and Phenix City on the Internet at the sites listed below.

ADEM	http://www.adem.state.al.us/programs/air/airquality/ozone/historical.cnt
JCDH	http://www.jcdh.org/EH/AnR/AnR03.aspx
HDNR	http://www.hsvcity.com/NatRes/airdata.php#blank

An overview of the 2012 Alabama Monitoring Network can be seen in Figure 1.

Summary of findings of the network review

ADEM

As discussed in last year's plan, the continuous PM_{2.5} monitors at the Florence (01-033-1002), Dothan (01-069-0003), Gadsden (01-055-0010), and Tuscaloosa (01-125-0003) sites were closed as of 12/31/2011.

The Lead monitoring site at Pryor Field Airport (01-083-0005) was established and started operating as of 01/01/2012.

The SO₂ monitoring equipment will be placed at the Chickasaw site (01-097-0003) for the Mobile MSA and at the Tuscaloosa site (01-125-0010) for the Tuscaloosa MSA. The start up date has been set for 01/01/2013 as required by the rule.

Due to loss of access, the site at Sumter County (01-119-0002) had to be closed. ADEM is in the process of securing a new site in the area and plans to be operational again in 2012.

HDNR

There are no changes planned for the Huntsville Air Monitoring Network.

JDCH

North Birmingham (01-073-0023) and Wylam (01-073-2003) PM 2.5 FRM sampling frequency will be reduced to 1 in 3 day.

PM_{2.5} speciation sampling frequency at Wylam (01-073-2003) will be increasing to follow North Birmingham's 1 in 3 day alternate schedule.

Providence (01-073-1009) and Pinson (01-073-5002) sites will be closed, eliminating Ozone and Continuous PM 2.5 sampling at those sites.

Community wide NO₂ sampling will be added to the NCore site at North Birmingham (AQS ID 01-073-0023).

A Near-Road NO₂ monitoring site will be established by January 2014 and CO monitor currently at East Thomas (AQS ID 01-073-0028) will be relocated to this site (required to be operational by January 1, 2017).

Table 1 - 2012 Alabama Monitoring Network

Site Common Name	AQS ID	Ozone	PM2.5	PM 2.5 collocated	PM2.5 Spec.	BAM (Cont. PM2.5)	TEOM (Cont. PM2.5)	PM 10 LoVol	PM10 LoVol Collocated	PM10	PM10 collocated	PM 10 Continuous	Lead	Lead Collocated	Lead-PM10	SO2	NO2	NOy	CO
JCDH Sites																			
North Birmingham	01-073-0023	x	x	x	x			x	x					x	x	x	B	x	x
East Thomas, Finley Ave	01-073-0028																		x
Northside School	01-073-0034									x	x								
Fairfield	01-073-1003	x								x						x			x
McAdory School	01-073-1005	x	x				x	x											
Dolomite,BGC	01-073-1008									C									
Providence	01-073-1009	PC	C				PC	C											
Leeds Elem. School	01-073-1010	x	x					x		x									
Wylam	01-073-2003		x		x		x	x	x			x							
Hoover	01-073-2006	x	C				x	C											
Pinson High School	01-073-5002	PC	C				PC	C											
Corner High School	01-073-5003	x	C				x	C											
Tarrant Elem. School	01-073-6002	x						x		x		x							
Sloss Shuttlesworth	01-073-6004							x				x							x
ADEM Sites																			
Fairhope	01-003-0010	x	x																
Ashland	01-027-0001		x																
Muscle Shoals	01-033-1002	x	x			C													
Crossville	01-049-1003		x																
DBT	01-051-0001	x																	
Gadsden - CC	01-055-0010		x			C													
Southside	01-055-0011	x																	
Dothan -CC	01-069-0003		x			C													
Dothan	01-069-0004	x																	
Mobile - Chickasaw	01-097-0003	x								C						B			
Mobile-WKRG	01-097-0016									x	x								
Mobile - Bay Road	01-097-2005	x																	
Montgomery - MOMS	01-101-1002	x	x	x	x					x									
Decatur	01-103-0011	x	x			x													
Phenix City - Downtown	01-113-0001		x	x	x	A													
Phenix City - Ladonia	01-113-0002	x																	
Helena	01-117-0004	x																	
Pelham	01-117-0006		x																
Sumter	01-119-0002	A				A													
Childersburg	01-121-0002		x																
Tuscaloosa - VA Hospital	01-125-0003		x			C													
Duncanville, Tuscaloosa	01-125-0010	x														B			
Troy	01-109-0003												x	x					
Pryor Field Airport	01-083-0005												x						
HDNR Sites																			
Pulaski Pike	01-089-0002									x									
Madison St- Garage	01-089-0003									x									
Fire station #7	01-089-0004									x									
Huntsville Old Airport	01-089-0014	x	x	x	x		x			x	x								
Huntsville Capshaw Rd	01-089-0022	x																	

A= to operate 2012

B= to operate 2013

C= closed

PC= Proposed to close 2012

Network Plan Description

As per 40 CFR Part 58.10, an annual monitoring network plan, which provides for the establishment and maintenance of an air quality surveillance system consisting of the air quality monitors in the state, is required to be submitted by all states to U.S.EPA.

Specifically §58.10 (a) requires for each existing and proposed monitoring site:

1. A statement of purpose for each monitor.
2. Evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of 40 CFR Part 58, where applicable.
3. Proposals for any State and Local Air Monitoring station (SLAMS) network modifications.

§58.10 (b) requires the plan must contain the following information for each existing and proposed site:

1. The Air Quality System (AQS) site identification number.
2. The location, including street address and geographical coordinates.
3. The sampling and analysis method(s) for each measured parameter.
4. The operating schedules for each monitor.
5. Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
6. The monitoring objective and spatial scale of representativeness for each monitor.
7. The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} NAAQS as described in §58.30.
8. The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.
9. The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
10. Any source-oriented monitors for which a waiver has been requested or granted by the U.S.EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
11. Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the U.S.EPA Regional Administrator for the use of Pb-PM₁₀ monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

Monitoring Requirements

Appendix A of 40 CFR Part 58 outlines the Quality Assurance Requirements for SLAMS, SPMs, and PSD Air Monitoring. It details the calibration and auditing procedures used to collect valid air quality data, the minimum number of collocated monitoring sites, the calculation used for data quality assessments, and the reporting requirements. All sites in Alabama operate following the requirements set forth in this appendix.

Appendix C of 40 CFR Part 58 specifies the criteria pollutant monitoring methods, which must be used in SLAMS and NCore stations. All criteria pollutant monitoring in Alabama follows the methods specified in this appendix.

Appendix D of 40 CFR Part 58 deals with the network design criteria for ambient air quality monitoring. The overall design criteria, the minimum number of sites for each parameter, the type of sites, the spatial scale of the sites, and the monitoring objectives of the sites are detailed. In designing the air monitoring network for Alabama, the requirements of this appendix were followed. The specifics for each pollutant network are in their individual chapters.

Appendix E of 40 CFR Part 58 deals with the placement of the monitoring probe, its spacing from obstructions and what materials the probe can be made of. All monitors operated in Alabama meet Appendix E criteria.

Population and CBSA

Alabama has a population of 4,802,740, of which 3,685,414 is located in the 12 MSAs listed in Table 2.

Table 2 - 2011 Estimated MSA Population

Metropolitan Statistical Areas	
Anniston-Oxford, AL	117,797
Auburn-Opelika, AL	143,468
Birmingham-Hoover, AL	1,132,264
Columbus, GA-AL	301,439
Decatur, AL	154,070
Dothan, AL	146,562
Florence-Muscle Shoals, AL	147,293
Gadsden, AL	104,303
Huntsville, AL	425,480
Mobile, AL	412,577
Montgomery, AL	378,608
Tuscaloosa, AL	221,553

Minimum monitoring requirements vary for each pollutant and can be based on a combination of factors such as population, the level of monitored pollutants and Core Based Statistical Area (CBSA) boundaries as defined in the latest US Census information. The term "Core Based Statistical Area" (CBSA) is a collective term for both Metropolitan Statistical Areas (MSA) and Micropolitan Statistical Areas (μ SA).

Figure 1 shows a map of the current CBSAs in Alabama.

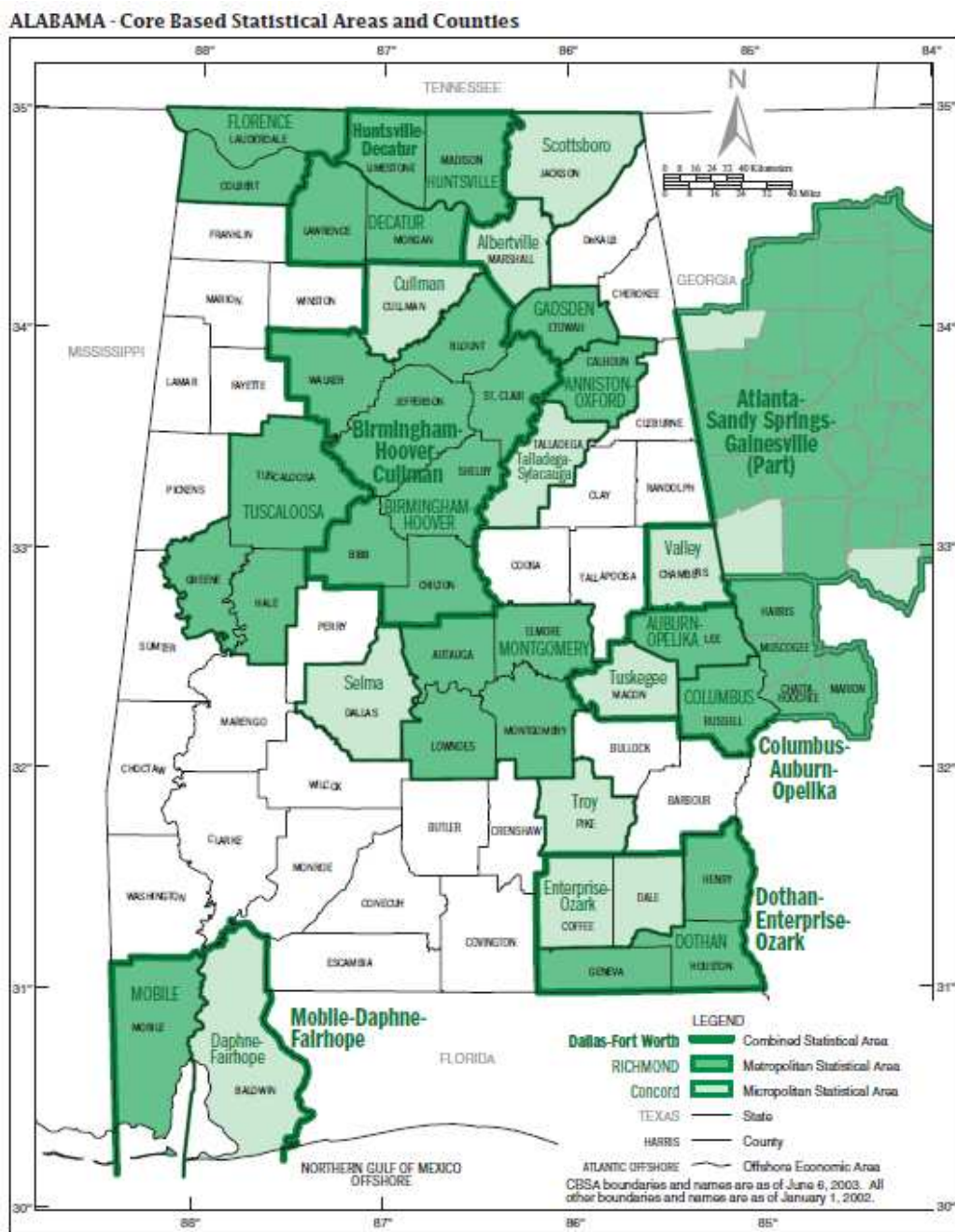


Figure 1 – AL CBSAs and Counties

The Minimum number of sites required by regulation will be discussed in each Pollutant Section.

Types of Monitoring Stations

PAMS – *Photochemical Assessment Monitoring Station*: Sites established to obtain more comprehensive data of areas with high levels of ozone pollution by also monitoring NO_x and VOCs. **PAMS monitoring is not required in the state of Alabama.**

SLAMS - *State or Local Ambient Monitoring Station*: The SLAMS make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons. **These will be described in detail by pollutant and Monitoring Agency later.**

STN – *PM_{2.5} Speciation Trends Network*: A PM_{2.5} speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulates. **There is currently 1 STN site located in Alabama at the North Birmingham site (01-073-0023).**

Supplemental Speciation - Any PM_{2.5} speciation station that is used to gain supplemental data and is not dedicated as part of the speciation trends network.

There are currently 4 PM_{2.5} supplemental speciation sites located in Alabama. These are at Huntsville, Montgomery, Phenix City, and Wylam.

NCore – *National Core multi-pollutant monitoring station*: Sites that measure multiple pollutants at trace levels in order to provide support to integrated air quality management data needs. Each state is required to operate one NCore site. **The NCore site for Alabama is located in the Birmingham MSA at the North Birmingham site (01-073-0023) operated by JDCH. Additional information concerning this site can be found in the JCDH portion of the network description.**

CASNET – *Clean Air Status and Trends Network*: is a national air quality monitoring network designed to provide data to assess trends in air quality, atmospheric deposition, and ecological effects due to changes in air pollutant emissions. CASTNET provides long-term monitoring of air quality in rural areas to determine trends in regional atmospheric nitrogen, sulfur, and ozone concentrations and deposition fluxes of sulfur and nitrogen pollutants in order to evaluate the effectiveness of national and regional air pollution control programs.

There is one CASNET site in Alabama and it is operated by EPA. It is Sand Mountain (AQS ID 01-049-9991) in Dekalb county.

Alabama's SLAMS by Pollutant

Lead Network

In 2008, the U.S. EPA revised the National Ambient Air Quality Standard for lead. The lead standard was lowered from 1.5 ug/m³ for a quarterly average to 0.15 ug/m³ based on the highest rolling 3 month average over a 3 year period. EPA set minimum monitoring requirements for source and population oriented monitoring. Source oriented monitoring is required near sources that have emissions greater than or equal to 1 ton per year. Population-oriented monitoring is required for CBSAs greater than 500,000. In December of 2010, EPA revised the lead rule to include sources greater than ½ ton per year and stated that the population oriented monitors would be located at the NCore sites.

Based on current emissions data or modeling ADEM has identified 1 source which emits greater than ½ ton of lead per year (Sanders Lead Co.). ADEM has an existing monitor (AQS ID 01-109-0003) near that source. This monitor appears to be sited in the proper location, and ADEM will continue to operate that monitor. To meet QA requirements, collocated Lead monitoring is also occurring at this site.

Based on current emission data, JCDH and the City of Huntsville have no sources that would require monitoring.

In addition, Pb monitoring is required at any NCore site in each CBSA with a population equal to or greater than 500,000 people. This site is being operated by JDCH and is located at the NCore (North Birmingham AQS ID 01-073-0023) site and has been collecting data since 12-29-2011.

Also, in the 2010 rule revision, EPA identified 15 airports across the nation that have significant reciprocating engine aircraft traffic and ambient air within 150 meters of the traffic. A lead monitor is required to be operated at these airports for at least one year. If the lead concentration measured by this monitor exceeds 50 percent of the NAAQS, the monitor will become a permanent monitor. Alabama's Pryor Field was on this list and a site (AQS ID 01-083-0005) has been established and will continue to operate for one year. The first quarter monitoring is complete for Pryor Field and the design value is 0.009 ug/m³.

Carbon Monoxide (CO) Network

On August 12, 2011, EPA issued a final rule that retained the existing NAAQS for Carbon Monoxide (CO) and made changes to the ambient air monitoring requirements for CO. EPA revised the minimum requirements for CO monitoring by requiring CO monitors to be sited near roads in certain urban areas.

40 CFR Part 58 Appendix D, 4.2 details the requirements for CO monitoring.

4.2.1 General Requirements. (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO₂ monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO₂ monitor, only one CO monitor is required to be collocated with a near-road NO₂ monitor within that CBSA.

(b) If a state provides quantitative evidence demonstrating that peak ambient CO concentrations would occur in a near-road location which meets microscale siting criteria in Appendix E of this part but is not a near-road NO₂ monitoring site, then the EPA Regional Administrator may approve a request by a state to use such an alternate near-road location for a CO monitor in place of collocating a monitor at near-road NO₂ monitoring site.

EPA is specifying that monitors required in CBSAs of 2.5 million or more persons are to be operational by January 1, 2015. Those monitors required in CBSAs having 1 million or more persons are required to be operational by January 1, 2017.

Based on this, one CO monitor would be required to be collocated with the near road NO₂ monitoring road site in the Birmingham-Hoover, AL CBSA and operational by January 1, 2017.

JDCH is currently reviewing locations for the near-road NO₂ monitoring site. Once this is established, JDCH plans to relocate the CO monitor currently at East Thomas (AQS ID 01-073-0028) to this new site to meet the new monitoring requirements.

Currently, CO is monitored at the following 4 sites :

Table 3 - JCDH CO Monitoring sites

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0028	Jefferson	East Thomas, Finley Ave.	33.529444	-86.850278	3/1/81	High Pop. Exposure	Micro	Continuously Year-round
01-073-1003	Jefferson	Fairfield, PFD	33.485556	-86.915062	12/11/74	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-6004	Jefferson	N. B'ham, Sloss	33.565278	-86.796389	9/25/96	High Conc.	Neighborhood	Continuously Year-round
01-073-0023	Jefferson	N. B'ham, SR	33.553031	-86.814853	1/1/11	High Pop. Exposure	Neighborhood	Continuously Year-round

Nitrogen Dioxide (NO₂) Network

On January 22, 2010, the US EPA finalized the monitoring rules for Nitrogen Dioxide. The new rules include new requirements for the placement of new NO₂ monitors in urban areas. These include:

Near Road Monitoring

- At least one monitor must be located near a major road in each CBSA with a population greater than or equal to 500,000 people. A second monitor is required near another major road in areas with either:
 - (1) CBSA population greater than or equal to 2.5 million people, or
 - (2) one or more road segments with an annual average daily traffic (AADT) count greater than or equal to 250,000 vehicles.

These NO₂ monitors must be placed near those road segments ranked with the highest traffic levels by AADT, with consideration given to fleet mix, congestion patterns, terrain, geographic location, and meteorology in identifying locations where the peak concentrations of NO₂ are expected to occur. Monitors must be placed no more than 50 meters (about 164 feet) away from the edge of the nearest traffic lane.

Community Wide Monitoring

- A minimum of one monitor must be placed in any urban area with a population greater than or equal to 1 million people to assess community-wide concentrations.
- An additional 53 monitoring sites will be required to assess community-wide levels in urban areas.
- Some NO₂ monitors already in operation may meet the community-wide monitor siting requirements.

Monitoring to Protect Susceptible and Vulnerable Populations

- Working with the states, EPA Regional Administrators will site at least 40 additional NO₂ monitors to help protect communities that are susceptible and vulnerable to NO₂-related health effects.
- All new NO₂ monitors must begin operating no later than January 1, 2013.

Birmingham-Hoover is the only CBSA in Alabama with a population greater than 500,000. However, the population is less than 2.5 million and there are no road segments with AADT greater than 250,000 vehicles. Therefore, one near road NO₂ monitor will need to be located in the Birmingham MSA by 2013. Jefferson County's meteorologist and engineers are currently researching appropriate sites using the technical assistance document and should have several sites identified by mid-summer.

The Birmingham MSA's population is greater than 1 million, so there will need to be one NO₂ monitor located there by 2013 for community wide monitoring. JDCH proposes adding community wide NO₂ sampling to the NCore site at North Birmingham (AQS ID 01-073-0023) and begin operation by January 1, 2013.

Sulfur Dioxide (SO₂) Network

On June 2, 2010, EPA strengthened the primary NAAQS for sulfur dioxide (SO₂). EPA is revising the primary SO₂ standard by establishing a new 1-hour standard at a level of 75 parts per billion (ppb).

The current monitoring regulations require monitors to be placed in CBSAs based on a Population Weighted Emissions Index (PWEI) for the area.

The rule requires:

- 3 monitors in CBSAs with index values of 1,000,000 or more;
- 2 monitors in CBSAs with index values less than 1,000,000 but greater than 100,000; and
- 1 monitor in CBSAs with index values greater than 5,000.

All newly sited SO₂ monitors must be operational by January 1, 2013.

Based on this the Birmingham-Hoover CBSA will require 2 SO₂ monitors. JDCH has two sites at North Birmingham (AQS ID 01-073-0023) and Fairfield (AQS ID 01-073-1003).

The Huntsville MSA has a PWEI less than 5,000, so no SO₂ monitor is required.

Based on PWEI estimates, ADEM will need to establish 2 new SO₂ monitoring sites in the Tuscaloosa and Mobile MSAs. ADEM plans to place these monitors at the existing Tuscaloosa County site (AQS ID 01-125-0010) for the Tuscaloosa MSA and at the existing Chickasaw site (AQS ID 01-097-0003) for the Mobile MSA. Below is the reasoning for this.

For the Tuscaloosa MSA, we believe the new SO₂ monitor can be collocated with the existing monitor in Tuscaloosa:

- Tuscaloosa County is the most populated county by far in the Tuscaloosa MSA (which includes Tuscaloosa, Greene, and Hale Counties).
- The Tuscaloosa wind rose shows a strong southerly to southwesterly component, which would transport SO₂ from the area of higher emissions near the Greene/Hale County line.
- The Tuscaloosa wind rose also shows a strong northwesterly to northeasterly component, which would pick up the plumes from the SO₂ sources northwest of the monitor in Tuscaloosa County, as well as the plume from a larger SO₂ source in Walker County.

For the Mobile MSA, we believe the new SO₂ monitor can be collocated with the existing monitor in Chickasaw:

- The Chickasaw monitor is to the south of two large SO₂ sources in northeastern Mobile County, and there are other additional SO₂ sources located to the north and south of the monitor.
- The Bay Road monitor also has SO₂ sources nearby, but the Bay Road monitor is more subject to a bay breeze and sea breeze than the Chickasaw monitor.
- The Mobile wind rose has rather strong components both from the north and the south, so the Chickasaw monitor is in a good location to pick up plumes from many of the SO₂ sources in Mobile County.
- The Mobile wind rose shows the strongest wind component from the southeast. However, placing the SO₂ monitor in an area to the northwest of the SO₂ sources would move the monitor further away from the most populated areas in Mobile County. Additionally, the sea or bay breeze probably adds to the southeasterly wind component seen in the Mobile wind rose. Placing a monitor further inland in Mobile County could reduce the southeasterly component. Chickasaw is a good location for the monitor due to these factors.

For the wind roses and emission source maps see Appendix B.
For PWEI table see below.

Table 4 - CBSA's PWEI and number of monitors required
Population Weighted Emissions Index (PWEI) Calculations
May 2011 - Using 2009 Census Estimates & 2008 NEI v1.5 (no fires included)

CBSA Name	2008 NEI v1.5 so2 (tpy)	Population (2011)	PWEI in Million persons-tpy	Required Monitors
Birmingham-Hoover, AL	230,949	1,131,070	261,220	2
Mobile, AL	48,067	411,721	19,790	1
Tuscaloosa, AL	25,076	210,839	5,287	1
Florence-Muscle Shoals, AL	32,662	144,238	4,711	0
Columbus, GA-AL	5,202	292,795	1,523	0
Scottsboro, AL	28,653	52,838	1,514	0
Montgomery, AL	3,762	366,401	1,378	0
Gadsden, AL	11,111	103,645	1,152	0
Decatur, AL	5,018	151,399	760	0
Talladega-Sylacauga, AL	6,790	80,242	545	0
Troy, AL	7,728	30,461	235	0
Huntsville, AL	367	406,316	149	0
Daphne-Fairhope-Foley, AL	169	179,878	30	0
Selma, AL	562	41,925	24	0
Anniston-Oxford, AL	98	114,081	11	0
Auburn-Opelika, AL	75	135,883	10	0
Dothan, AL	62	142,693	9	0
Albertville, AL	72	90,399	7	0
Enterprise-Ozark, AL	49	96,782	5	0
Eufaula, AL-GA	100	32,396	3	0
Cullman, AL	36	81,778	3	0
Fort Payne, AL	34	69,380	2	0
Alexander City, AL	32	51,564	2	0
Valley, AL	47	34,320	2	0
Tuskegee, AL	14	21,789	0	0

PM 10 Network

PM10 has been a criteria pollutant since 1987. Since that time there has been widespread monitoring of the PM10 levels in Alabama. In 2006, the US EPA modified the NAAQS for PM10 to revoke the annual standard. Currently, there is still a daily standard of 150 $\mu\text{g}/\text{m}^3$ based on 3 years of data. All monitors in the State have recorded PM10 levels that meet the NAAQS. Table 5 shows the minimum monitoring requirements.

Table 5 - APPENDIX D TO PART 58. PM10 MINIMUM MONITORING REQUIREMENTS**TABLE D-4 OF APPENDIX D TO PART 58. PM10 MINIMUM MONITORING REQUIREMENTS
(NUMBER OF STATIONS PER MSA)¹**

Population category	High concentration ²	Medium concentration ³	Low concentration ^{4,5}
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

1 Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.

2 High concentration areas are those for which ambient PM10 data show ambient concentrations exceeding the PM10 NAAQS by 20 percent or more.

3 Medium concentration areas are those for which ambient PM10 data show ambient concentrations exceeding 80 percent of the PM10 NAAQS.

4 Low concentration areas are those for which ambient PM10 data show ambient concentrations less than 80 percent of the PM10 NAAQS.

5 These minimum monitoring requirements apply in the absence of a design value.

The Birmingham MSA is meeting NAAQS for PM10. According to table D4 above, the MSA would be classified as medium concentration for an area larger than 1,000,000 people. This means that the Birmingham MSA would need 4 to 8 PM10 monitors. Currently, there are 4 High Volume PM10 monitors and 6 Low Volume PM 10 monitors located in the Birmingham MSA. They are all operated by the JCDH within Jefferson County. PM10 concentrations are highly effected by the presence of local emission sources. Approximately 77% of the MSA population is located in the two counties of Jefferson and Shelby. Sixty percent of the MSA population is located in Jefferson County. Therefore, PM10 monitoring is located in high emissions and high population areas of the MSA. The collocated site is a Northside school (AQS ID 01-073-0034). Historical monitoring in Walker, Shelby, and Chilton counties has indicated levels in the low concentration range.

All other monitors in Alabama have indicated the PM10 levels to be in the low concentration range. For MSAs less than 250,000 population zero PM10 monitors are required. Mobile and Montgomery have populations between 250,000 and 500,000 and are required to have 0 to 1 monitor in the MSA. Montgomery has 1 site and Mobile has 1 site and a collocated monitor there. The Huntsville MSA also falls in this size range and the City of Huntsville currently operates four PM10 monitors and 1 collocated monitor at Huntsville Old Airport (AQS ID 01-089-0014). The Columbus, GA- Phenix City, AL MSA has a population of 301,439 and has low concentration; there is one PM10 monitor in that area operated by the State of Georgia.

Ozone Network

Minimum monitoring requirements for ozone are based on population and whether the design value is less than 85% of the NAAQS or greater than or equal to 85% of the NAAQS (See Table 6). The NAAQS for ozone is 0.075 parts per million of ozone; therefore, 85% of the NAAQS truncated is 0.063 ppm. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008). Figure 2 is a map of Alabama which shows the MSAs with the population indicated and the level of the design value.

Table 6 - APPENDIX D TO PART 58. SLAMS MINIMUM O₃ MONITORING REQUIREMENTS
TABLE D-2 OF APPENDIX D TO PART 58.— SLAMS MINIMUM O₃
MONITORING REQUIREMENTS

MSA population ^{1,2}	Most recent 3-year design value concentrations ≥85% of any O ₃ NAAQS ³	Most recent 3-year design value concentrations <85% of any O ₃ NAAQS ^{3,4}
>10 million	4	2
4–10 million	3	1
350,000–<4 million	2	1
50,000–<350,000 ⁵	1	0

1 Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

2 Population based on latest available census figures.

3 The ozone (O₃) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

4 These minimum monitoring requirements apply in the absence of a design value.

5 Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table 7 - MSA population with Current Ozone Design Value

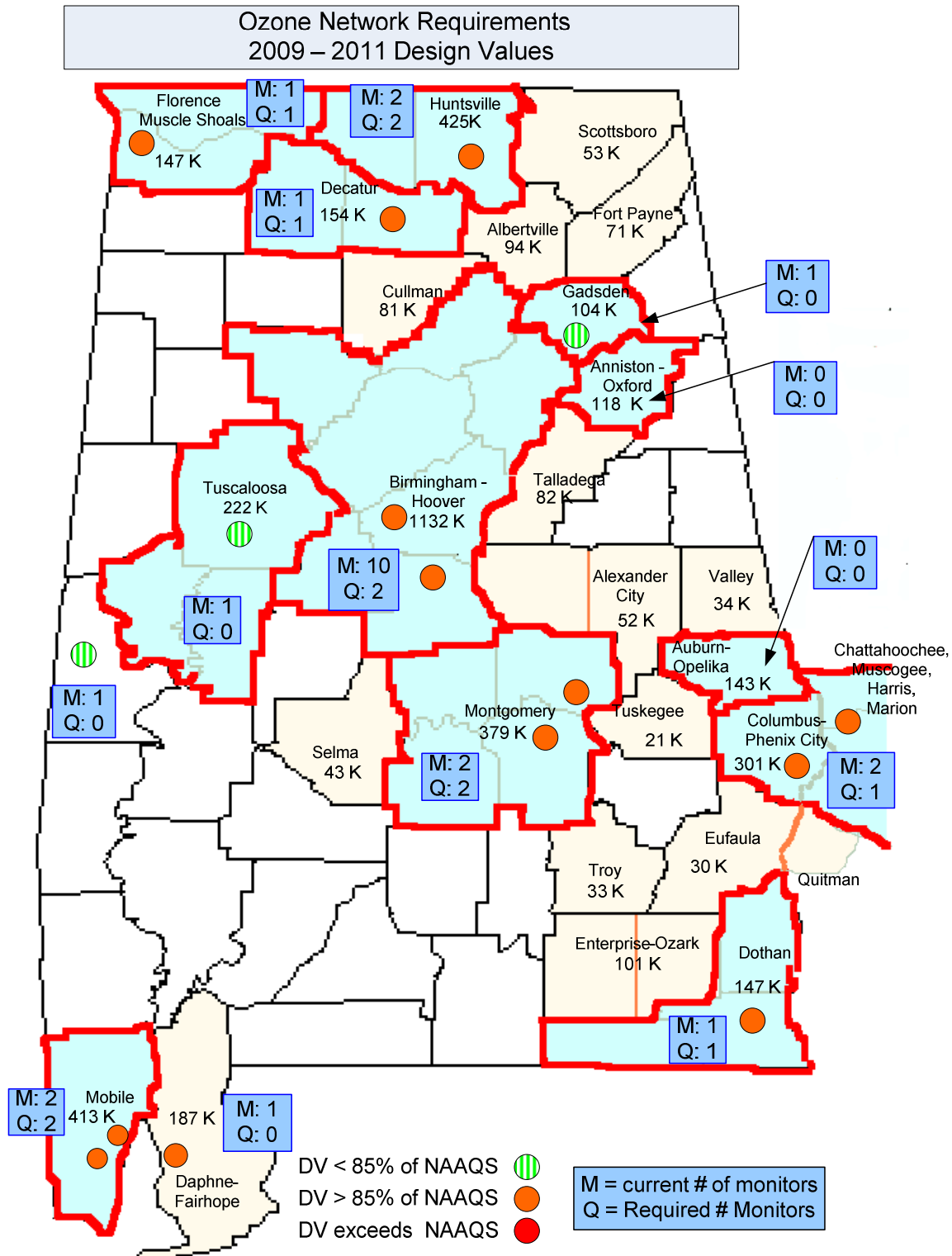
MSA	MSA Population (2011est.)	Ozone DV 2009-2011	# of sites required per CFR	Current # of sites
Birmingham-Hoover	1,132,264	0.075	2	10
Columbus, GA- Phenix City, AL	301,439	0.067	1	2*
Decatur	154,070	0.067	1	1
Dothan	146,562	0.063	1	1
Florence-Muscle Shoals	147,293	0.064	1	1
Gadsden	104,303	0.062	0	1
Huntsville	425,480	0.069	2	2
Mobile	412,577	0.073	2	2
Montgomery	378,608	0.068	2	2
Tuscaloosa	221,553	0.058	0	1
Anniston-Oxford	117,797	NA	0	0
Auburn-Opelika	143,468	NA	0	0
Fairhope	not in MSA	0.072		1
Sumter Co.	not in MSA	0.060		1
*1 in AL and 1 in GA		DV ≥ 85% of the NAAQS		

Table 7 above shows Alabama's MSAs along with their population, 2011 Ozone Design Values, the number of monitors required by the CFR and the number of existing monitors.

Table 8 below shows the individual monitor's 2009-2011 Design Values and the maximum Design Value for the MSA.

Table 8 - Monitors with Ozone 2009-2011 Design Values

Site Name	AQS ID	2009-2011 Design Values	MSA	MSA Max DV
Helena	01-117-0004	0.072	Birmingham-Hoover	0.075
Tarrant Elem. School	01-073-6002	0.074		
Pinson High School	01-073-5002	0.070		
Fairfield	01-073-1003	0.070		
McAdory School	01-073-1005	0.075		
Hoover	01-073-2006	0.075		
North Birmingham	01-073-0023	0.071		
Corner High School	01-073-5003	0.070		
Providence	01-073-1009	0.070		
Leeds Elem. School	01-073-1010	0.071		
Phenix City - Ladonia	01-113-0002	0.066	Columbus, GA-Phenix City, AL	0.067
Columbus, GA, Airport	13-215-0008	0.067		
Decatur	01-103-0011	0.067	Decatur	0.067
Dothan	01-069-0004	0.063	Dothan	0.063
Muscle Shoals	01-033-1002	0.064	Florence	0.064
Southside	01-055-0011	0.062	Gadsden	0.062
Huntsville Old Airport	01-089-0014	0.069	Huntsville	0.069
Huntsville Capshaw RD	01-089-0022	NA		
Mobile - Chickasaw	01-097-0003	0.070	Mobile	0.073
Mobile - Bay Road	01-097-2005	0.073		
DBT	01-051-0001	0.067	Montgomery	0.068
Montgomery - MOMS	01-101-1002	0.068		
Duncanville, Tuscaloosa	01-125-0010	0.058	Tuscaloosa	0.058
Fairhope	01-003-0010	0.072		0.072
Sumter Co.	01-119-0002	0.061		0.060



Tallapoosa

Figure 2 – Ozone Monitoring Requirements

Ozone Monitoring requirements for Alabama MSAs**Mobile**

The Mobile MSA would be required to have 2 ozone monitoring sites because its population is larger than 350,000, and the design value is greater than 85% of the NAAQS. Mobile County currently has 2 ozone sites.

Montgomery

The Montgomery MSA's population is greater than 350,000, and the design value is greater than 85% of the NAAQS. Two ozone monitors are required for this MSA. There are currently 2 sites, and these will be retained.

Tuscaloosa

The population of the Tuscaloosa MSA is between 50,000 and 350,000, and the design value is less than 85% of the NAAQS therefore no monitor is required for that area. There is currently one monitor in the MSA; however, this monitor will be maintained.

Columbus, Ga.-Phenix City, AL

The Columbus-Phenix City MSA ozone design value is greater than 85% of the NAAQS and the population is between 50,000 and 350,000; therefore, 1 monitor is required for that area. There is currently 1 site maintained by ADEM, west of Phenix City and 1 site is located in Georgia and operated by the State of Georgia.

Birmingham

The population of the Birmingham MSA is between 350,000 and 4,000,000, and the design value is greater than 85% of the NAAQS; therefore, the MSA is required to have 2 Ozone sites. There are currently 10 ozone sites in this MSA. One site is located in Shelby County and is operated by ADEM. Nine sites, operated by the JCDH, are located in Jefferson County. Additional information about these monitors is found in the Network description.

Dothan

The Dothan MSA population is between 50,000 and 350,000 and the design value is greater than 85% of the NAAQS. Dothan has one required site. This site will be maintained.

Gadsden

The Gadsden MSA population is between 50,000 and 350,000, and the design value is less than 85% of the NAAQS therefore no monitor is required for that area. There is currently one monitor in the MSA and this monitor will be maintained.

Huntsville

The Huntsville MSA design value is greater than 85% of the NAAQS, and the population is greater than 350,000 so this MSA is required to have 2 ozone sites. There are currently two ozone sites in the Huntsville MSA and they are operated by the City of Huntsville.

Decatur

The Decatur MSA design value is greater than 85% of the NAAQS with a population between 50,000 and 350,000. Decatur is required to have 1 site and there is currently 1 site.

Florence

The Florence MSA population is between 50,000 and 350,000, and the design value is greater than 85% of the NAAQS and has one required site. This site will be maintained.

Auburn and Anniston-Oxford

Prior to the 2006 changes to the monitoring regulations, ADEM evaluated the ozone monitoring network annually to determine the adequacy of coverage. The MSAs of Auburn and Anniston-Oxford were evaluated and it was determined that due to the close proximity of ozone monitors in neighboring areas, which were below the NAAQS, additional monitors would not be needed. The monitors in the adjacent areas still provide adequate monitoring coverage. Since these areas do not have design values, no monitors are required by Appendix D of 40 CFR 58.

Sites not located in an MSA

The Daphne-Fairhope micropolitan statistical area (μ SA), which comprises Baldwin County, is not required to have an ozone monitor. An ozone monitor was added to Baldwin County to provide additional information on ozone transport in the area. This monitor also provides input to EPA's AirNow ozone mapping system. This web-based system provides near-real time ozone concentration data to the public. Daphne-Fairhope μ SA is the largest micropolitan area in the State.

Sumter County has one ozone monitor that represents rural, background ozone values for the State. The design value for this monitor is less than 85% of the NAAQS. This site is presently being relocated due to logistical reasons.

PM_{2.5} Network

Minimum monitoring requirements for PM_{2.5} are based on population and whether the design value is less than 85% of the NAAQS or greater than or equal to 85% of the NAAQS (See Table 9). In addition to these monitors, the State is required to operate a regional background and a regional transport site. Section 4.7.2 of Appendix D of 40 CFR 58 also requires a collocated continuous PM_{2.5} monitor in each MSA that is required to have a FRM monitor. The number of collocated continuous monitors required for an MSA will be equal to at least half of the required FRM monitors for that MSA. The State is also required to operate PM_{2.5} speciation monitors to characterize the constituents of PM_{2.5}. The number of speciation monitors is determined in consultation with EPA Region IV. PM_{2.5} design values in Table 10 are based on 2009 – 2011 data. A design value of **30** ug/m³ is the lowest value that is greater than or equal to 85% of the daily NAAQS, and a design value of **12.8** ug/m³ is the lowest value that is greater than or equal to 85% of the annual NAAQS.

Table 9 - APPENDIX D TO PART 58, PM_{2.5} MINIMUM MONITORING REQUIREMENTS

TABLE D-5 OF APPENDIX D TO PART 58. PM_{2.5} MINIMUM MONITORING REQUIREMENTS		
MSA population ^{1,2}	Most recent 3-year design value ≥85% of any PM _{2.5} NAAQS ³	Most recent 3-year design value <85% of any PM _{2.5} NAAQS ^{3,4}
>1,000,000	3	2
500,000–1,000,000	2	1
50,000–<500,000 ⁵	1	0

1 Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

2 Population based on latest available census figures.

3 The PM_{2.5} National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

4 These minimum monitoring requirements apply in the absence of a design value.

5 Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table 10 - MSA population with Current PM_{2.5} Design Value

MSA	MSA Population (2011est.)	PM _{2.5} 24 hr DV 2009-2011	PM _{2.5} Annual DV 2009-2011	# of sites required per CFR	Current # of sites
Birmingham-Hoover	1,132,264	27	12.9	3	10
Columbus, GA- Phenix City, AL	301,439	27	12.7	0	4*
Decatur	154,070	21	10.6	0	1
Dothan	146,562	21	10	0	1
Florence-Muscle Shoals	147,293	20	10	0	1
Gadsden	104,303	23	11.1	0	1
Huntsville	425,480	22	11	0	1
Mobile	412,577	19	9.8	0	1
Montgomery	378,608	22	11.2	0	1
Tuscaloosa	221,553	24	10.6	0	1
Anniston-Oxford	117,797	NA	NA	0	0
Auburn-Opelika	143,468	NA	NA	0	0
Childersburg	not in MSA	24	11.8		1
Crossville (Background)	not in MSA	22	10.8	1	1
Ashland (Transport)	not in MSA	22	10.1	1	1
Fairhope	not in MSA	21	9.7		1
*1 in AL and 3 in GA		DV ≥ 85% of the NAAQS			

Table 11 - PM2.5 Design Values per Monitor

Site Name	AQS Site ID	PM2.5 24 hr DV 2009-2011	PM2.5 Annual DV 2009-2011	MSA
North Birmingham	01-073-0023	27	12.9	Birmingham
McAdory School	01-073-1005	23	11.3	
Providence	01-073-1009	22	10	
Leeds Elem. School	01-073-1010	23	11.6	
Wylam	01-073-2003	26	12	
Hoover	01-073-2006	23	11.1	
Pinson High School	01-073-5002	22	10.6	
Corner High School	01-073-5003	22	10.4	
Pelham	01-117-0006	22	10.6	
Muscogee DH GA	13-215-0001	25	12.7	Columbus, GA - Phenix City, AL
Columbus Airport GA	13-215-0008	26	11.8	
Cussetta Rd GA	13-215-0011	26	11.8	
Phenix City - Downtown	01-113-0001	27	12.2	
Decatur	01-103-0011	21	10.6	Decatur
Dothan	01-069-0003	21	10	Dothan
Muscle Shoals	01-033-1002	20	10	Florence
Gadsden - CC	01-055-0010	23	11.1	Gadsden
Huntsville Old Airport	01-089-0014	22	11	Huntsville
Mobile - Chickasaw	01-097-0003	19	9.8	Mobile
Montgomery – MOMS	01-101-1002	22	11.2	Montgomery
Tuscaloosa - VA Hospital	01-125-0004	24	10.6	Tuscaloosa
Fairhope	01-003-0010	21	9.7	Not in an MSA
Ashland	01-027-0001	22	10.1	Not in an MSA
Crossville	01-049-1003	22	10.8	Not in an MSA
Childersburg	01-121-0002	24	11.8	Not in an MSA

A map based on these design values is presented in figure 3 below.

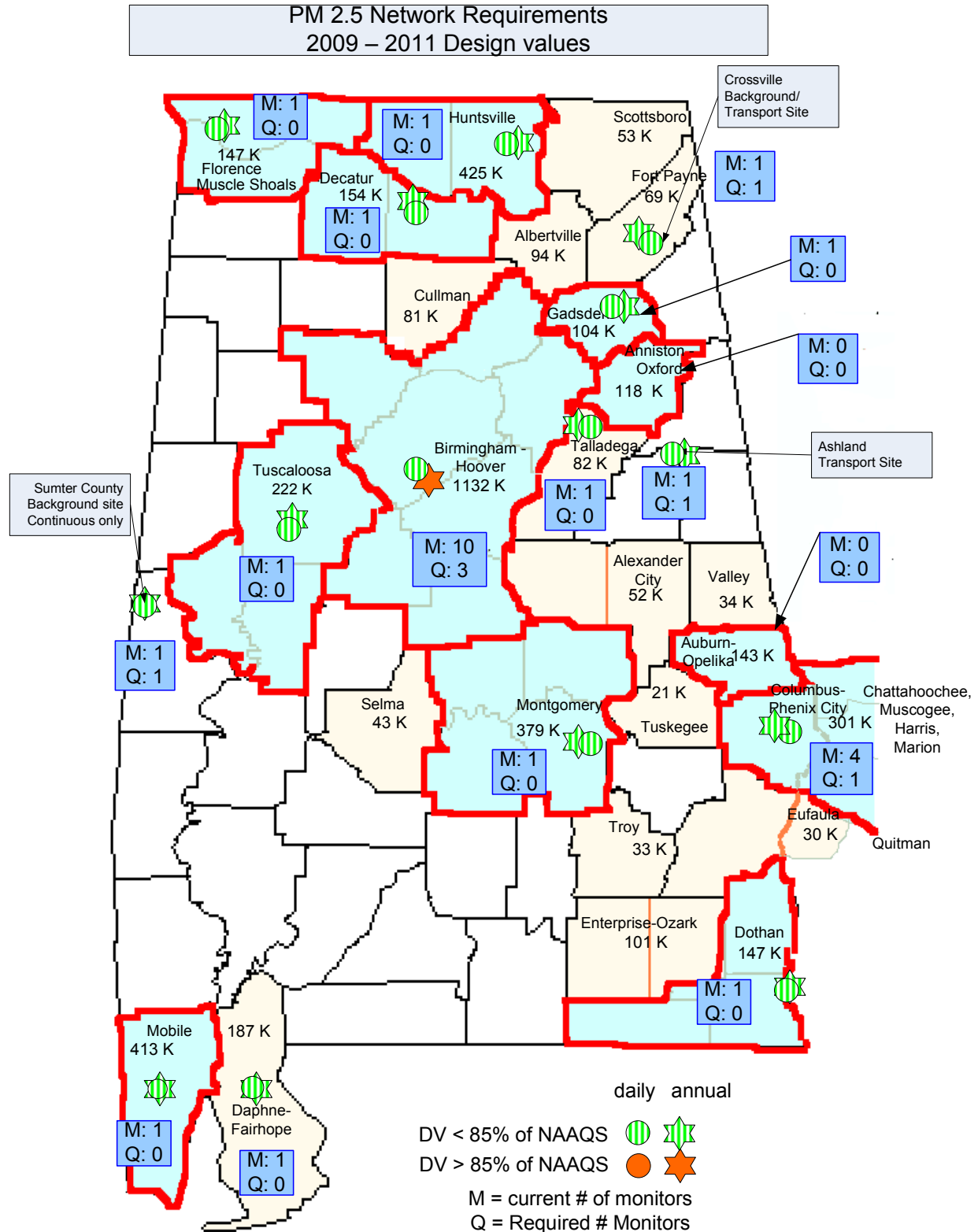


Figure 3 – PM2.5 Monitoring Requirements

PM2.5 Monitoring requirements for Alabama MSAs

Florence, Dothan, Gadsden and Tuscaloosa

The Florence, Dothan, Gadsden and Tuscaloosa MSAs have populations between 50,000 and 500,000 and the annual and daily design values are less than 85% of the NAAQS. These MSAs are not required to have an FRM or a continuous PM2.5 monitor. There is currently 1 FRM located in each of these MSAs.

Decatur

The Decatur MSA has a population between 50,000 and 500,000 and the annual and daily design values are less than 85% of the NAAQS. This MSA is not required to have an FRM or a continuous PM2.5 monitor. There is currently 1 FRM and 1 continuous monitor located in this MSA. The FRM and continuous monitor will be retained.

Huntsville

The Huntsville MSA design value is less than 85% of the NAAQS and the population is between 50,000 and 500,000. An FRM is not required. Currently, there is one FRM, one collocated monitor, one continuous monitor and one speciation monitor.

Birmingham

The Birmingham MSA population is greater than 1 million, and the design value is greater than 85% of the NAAQS. For this area, 3 FRM are required, and 2 continuous monitors are required. Currently, there are 5 FRM monitoring sites in this MSA. Pelham is operated by ADEM. The remaining 4 FRM sites are located in Jefferson County and are operated by the JCDH. JCDH also operates 1 Collocated monitor, 4 continuous monitors and 2 speciation monitors in Jefferson County. Further details of the JCDH PM2.5 network can be found in the Network Description section of this document.

Mobile

The Mobile MSA design value is less than 85% of the NAAQS and the population is between 50,000 and 500,000. An FRM is not required. There is currently 1 FRM and one continuous monitor being operated.

Columbus, Ga.-Phenix City, AL

The Columbus, Ga.-Phenix City, AL MSA is between 50,000 and 500,000 and the annual design value is less than 85% of the NAAQS. An FRM is not required. There are currently 3 FRMs, 2 continuous monitors, and 2 speciation monitors in this MSA. In the Columbus-Phenix City CMZ, ADEM operates 1 FRM, 1 collocated FRM, 1 speciation monitor, and 1 continuous PM2.5 monitor at the downtown site. The State of Georgia operates 3 FRM, 1 speciation monitor and 1 continuous monitor in Columbus.

Montgomery

The Montgomery MSA has a population between 50,000 and 500,000 and the design values are less than 85 % of the annual NAAQS. No FRM or continuous monitor is required to be operated in this MSA. There is currently 1 FRM, 1 collocated FRM and 1 continuous monitor operated by ADEM. In addition, ADEM operates a speciation monitor in Montgomery.

Auburn-Opelika and Anniston-Oxford

In 1999 when the PM_{2.5} monitoring program was implemented in Alabama, the MSAs of Auburn and Anniston-Oxford were evaluated to determine the need for monitors. It was determined that due to the close proximity of PM_{2.5} monitors in neighboring areas, additional monitors would not be needed. This is a reflection of the fact that PM_{2.5} can be transported long distances and affects large regions. The monitors in the adjacent areas still provide adequate monitoring coverage. Since these areas do not have design values, no monitors are required by Appendix D of 40 CFR 58.

Monitors not located in MSAs

ADEM operated a FRM in Sumter County but closed it in 2006. A continuous monitor in Sumter County was being operated as a rural background site in West Alabama until loss of the lease caused it to close. ADEM is in the process of securing a new site and plans to be operational again in 2012.

Talladega County is a Micropolitan Statistical Area with a population of 81,664. It is adjacent to the Anniston-Oxford MSA and the Birmingham MSA. There is currently 1 FRM located in Childersburg. The design value for this monitor is less than 85% of the NAAQS.

There is an FRM located in Ashland in Clay County to serve as a regional transport site in between the large MSAs of Birmingham and Atlanta. The design value for this monitor is less than 85% of the NAAQS.

The Daphne-Fairhope Micropolitan Statistical Area is not required to operate an FRM. 1 FRM is being operated at Fairhope and has design values less than 85% of the NAAQS.

Crossville has been a rural background site in northeast Alabama. The data from this site is less than 85% of the NAAQS. ADEM intends to maintain this site.

Quality Assurance

Each of the three monitoring agencies have U.S. EPA approved Quality Assurance Program Plans that detail the activities used to control and document the quality of the data collected. Part of the EPA required quality control program for particulate monitors is the use of collocated particulate monitors. 40 CFR 58, appendix A requires a percentage of manual particulate monitors to be collocated with FRM monitors so that quality statistics can be calculated.

Each agency network includes monitors for this purpose.

Monitoring Equipment Evaluation

An evaluation of the condition of ambient monitors and auxiliary equipment was performed by each of the three monitoring agencies. The equipment was categorized as “good” or “poor”. As resources allow equipment in “poor” condition will be replaced.

NETWORK DESCRIPTIONS

A description of the ambient air monitoring networks for each air pollution agency will be presented in this section.

ADEM

Abbreviations	
Scale	
N	Neighborhood (0.5 – 4 Kilometers)
U	Urban (overall citywide conditions, 4 -50 kilometers)
R	Regional (usually rural, with homogenous geography, tens to hundreds of kilometers)
M	Middle Scale
Type	
CAS	CASNET operated by EPA
CS	Core SLAMS
S	SLAMS
QA	QA Collocated Monitor
SPM	Special Purpose Monitor
Operating Schedule	
C	Continuous monitor
D	Daily 24-hour samples
3	1 24-hour sample every 3 days (on national schedule)
6	1 24-hour sample every 6 days (on national schedule)
Methods	
H	Hi-volume SSI sampler
L	Low Volume SSI
T	TEOM continuous monitor
B	BAM continuous monitor
U	UV photometric ozone analyzer
S	Hi-Volume Total Suspended Particulate monitor
G	Lead Analysis by Graphite furnace
NAAQS¹	
Y,N	Data suitable for comparison to NAAQS

¹ Collocated monitors must be operated in the same manner as the federal reference method but 1 monitor at the site is designated as the main monitor for comparison to the NAAQS.

PM10

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	C H E M I C A N A L Q U A L I T Y	Comment	
Mobile – Chickasaw	Mobile	01-097-0003	Iroquois And Azalea Chickasaw, Mobile Co	30.76972	-88.0875	N	S P M	Highest Concentration/ Mobile, AL	5/22/1974	Closed 2011	T	C	Closed	
Mobile – WKRG Main	Mobile	01-097-0016	WKRG transmitting Stn, Telegraph Rd.	30.72028	-88.05889	N	S	Population Exposure / Mobile, AL	1/1/1982	active	S	6	Y	
Mobile – WKRG	Mobile	01-097-0016	WKRG transmitting Stn, Telegraph Rd.	30.72028	-88.05889	N	Q A	Population Exposure/ Mobile, AL	1/1/1982	active	S	6	Y	collocated
Montgomery - MOMS	Montgomery	01-101-1002	1350 Coliseum Blvd, Montgomery, AL	32.41278	-86.26336	N	S	Population Exposure/ Montgomery, AL	6/1/1993	active	S	6	Y	

Lead

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	C H E M I C A N A L Q U A L I T Y	Comment	
Troy	Pike	01-109-0003	Henderson Road, Troy, AL	31.790560	-85.979170	N	S	Highest Concentration / Troy,AL uSA	1/1/2009	active	S , G	6	Y	
Troy	Pike	01-109-0003	Henderson Road, Troy, AL	31.790560	-85.979170	N	Q A	Highest Concentration / Troy,AL uSA	1/1/2009	active	S , G	6	Y	collocated
Pryor Field Airport	Limestone	01-083-0005	US 31, Local On Calhoun Community College	34.645848	-86.947311	N	S M P	Highest Concentration / Huntsville MSA	1/1/2012	active	S , G	6	N	

PM 2.5

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	C H E M I C A L	D A T A Q U A L I T Y	Comment
Fairhope	Baldwin	01-003-0010	Fairhope High School, Fairhope, AL	30.49778	-87.88139	M	S	Population exposure/ Daphne-Fairhope µSA	1/1/2000	active	L	3	Y	
Ashland	Clay	01-027-0001	Ashland Airport	33.28111	-85.80222	R	S	Highest Concentration/ not in CBSA	1/1/1999	active	L	3	Y	
Muscle Shoals	Colbert	01-033-1002	2nd Street and Wilson Dam Road	34.76056	-87.65056	N	S	Highest Concentration/ Florence MSA	1/1/1999	active	L	3	Y	
Muscle Shoals	Colbert	01-033-1002	2nd Street and Wilson Dam Road	34.76056	-87.65056	N	S	Highest Concentration/ Florence MSA	1/1/1999	1/31/2012	B	C	N	Closed
Crossville	DeKalb	01-049-1003	13112 Hwy 68, Crossville AL	34.2875	-85.96833	N	S P M	General/background/ Fort Payne µSA	1/1/1999	active	L	3	Y	
Gadsden - CC	Etowah	01-055-0010	1001 Wallace Dr Gadsden, AL	33.99361	-85.99111	U	S	Population Exposure/ Gadsden MSA	1/1/2000	active	L	3	Y	
Gadsden - CC	Etowah	01-055-0010	1001 Wallace Dr Gadsden, AL	33.99361	-85.99111	U	S	Population Exposure/ Gadsden MSA	1/1/2000	1/31/2012	B	C	N	Closed
Dothan	Houston	01-069-0003	126 North St Andrews St. Civic Center	31.22621	-85.39082	N	S	Population Exposure/ Dothan MSA	1/7/2005	active	L	3	Y	
Dothan	Houston	01-069-0003	126 North St Andrews St. Civic Center	31.22621	-85.39082	N	S	Population Exposure/ Dothan MSA	1/7/2005	#####	B	C	N	Closed
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois and Azalea, Chickasaw	30.76972	-88.0875	N	C S	Population Exposure/ Mobile MSA	7/19/2002	active	L	3	Y	
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois and Azalea, Chickasaw	30.76972	-88.0875	N	S P M	Population Exposure/ Mobile MSA	7/19/2002	active	B	C	N	Continuous monitor
Mobile - Bay Road	Mobile	01-097-2005	Bay Road at Thomas Rd., Theodore	30.47444	-88.14111	N	S P M	Population Exposure/ Mobile MSA	1/1/1999	1/6/2012	L	3	Y	Closed

PM 2.5 continued

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	S C H E D U L E	N A Q S	Comment
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	C S	Population Exposure/ Montgomery MSA	1/16/2009	active	L	3	Y	
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	Q A	Population Exposure/ Montgomery MSA	1/16/2009	active	L	6	Y	Collocated
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	S P M	Population Exposure/ Montgomery MSA	4/1/2009	active	B	C	N	Collocated Continuous
Decatur	Morgan	01-103-0011	Wallace Ctr.Hwy 31, Decatur	34.51861	-86.97694	M	S	Population Exposure/ Decatur MSA	8/7/2001	active	L	3	Y	
Decatur	Morgan	01-103-0011	Wallace Ctr.Hwy 31, Decatur	34.51861	-86.97694	M	S P M	Population Exposure/ Decatur MSA	4/1/2009	active	B	C	N	Collocated Continuous
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	C S	Highest Concentration/ Columbus, GA-AL MSA	1/1/1999	active	L	3	Y	
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	Q A	Highest Concentration/ Columbus, GA-AL MSA	5/17/2004	active	L	3	Y	collocated
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	S P M	Highest Concentration/ Columbus, GA-AL MSA	1/25/2010	active	T	C	N	Collocated Continuous
Pelham	Shelby	01-117-0006	Pelham High School	33.31278	-86.82111	U	S	Highest Concentration/ Birmingham MSA	1/1/1999	active	L	3	Y	
Gaston (Sumter)	Sumter	01-119-0002	Sumter County - Kinterbush State Wildlife Mgt Area	32.36389	-86.20194	R	S	Background/General/ not in MSA	3/31/2004	active	T	C	N	Being relocated
Childersburg	Talladega	01-121-0002	300 1 st Street Southeast, Childersburg, AL	33.27944	-86.34944	N	S	Highest Concentration/ Talladega μ SA	1/1/1999	active	L	3	Y	
VA, Tuscaloosa	Tuscaloosa	01-125-0004	3701 Loop Road East	33.18903	-87.48421	N	S	Population Exposure/ Tuscaloosa MSA	10/1/2002	active	L	3	Y	
VA, Tuscaloosa	Tuscaloosa	01-125-0004	3701 Loop Road East	33.18903	-87.48421	N	S	Population Exposure/ Tuscaloosa MSA	10/1/2002	12/31/2012	B	3	N	Closed
Jasper	Walker	01-127-0002	Beville State Community College	33.83278	-87.2725	N	S	Population Exposure/ Birmingham MSA	1/1/1999	12/1/2011	L	3	Y	Closed

OZONE

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	S C H E D U L E	A Q S	Comment
Fairhope	Baldwin	01-003-0010	Fairhope High School, Fairhope, AL	30.49778	-87.88139	N	S P M	Population Exposure/ Mobile MSA	3/1/2000	active	U	C	Y	
Muscle Shoals	Colbert	01-033-1002	Wilson Dam Rd And 2nd St.	34.76056	-87.65056	N	S P M	Population Exposure/ Decatur MSA	3/1/2003	active	U	C	Y	
DBT	Elmore	01-051-0001	Dewberry Trail, Wetumpka	32.49833	-86.13667	U	S	Highest Concentration/ Montgomery MSA	3/1/1990	active	U	C	Y	
Southside	Etowah	01-055-0011	1450 Parker Anderson Lane, Southside, Al	33.9039	-86.0539	N	S	Max Concentration/ Gadsden MSA	4/26/2002	active	U	C	Y	
Dothan	Houston	01-069-0004	161 Buford Lane	31.19041	-85.42317	N	S	Population Exposure/ Dothan MSA	3/14/2005	active	U	C	Y	
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois And Azalea Chickasaw	30.76972	-88.0875	N	S	Population Exposure/ Mobile MSA	3/2/1982	active	U	C	Y	
Mobile - Bay Road	Mobile	01-097-2005	Bay Rd. ,Mobile AL	30.47444	-88.14111	U	S	Population Exposure/ Mobile MSA	3/1/1999	active	U	C	Y	
Montgomery - MOMS	Montgomery	01-101-1002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	S	Population Exposure/ Montgomery MSA	6/2/1993	active	U	C	Y	
Decatur	Morgan	01-103-0011	Wallace Development Center	34.51861	-86.97694	U	S	General/Background/ Decatur MSA	4/1/2000	active	U	C	Y	
Phenix City - Ladonia	Russell	01-113-0002	9 Woodland Drive (School) , Ladonia, Al	32.46785	-85.0839	U	S P M	Population Exposure/ Columbus, GA-AL MSA	3/1/2003	active	U	C	Y	
Helena	Shelby	01-117-0004	Helena, Bearden Farm	33.31694	-86.825	U	S	Population Exposure/ Birmingham MSA	1/1/1983	active	U	C	Y	
Gaston (Sumter)	Sumter	01-119-0002	Kinterbush State Wildlife Mgt Area, Gaston, AL	32.36389	-86.20194	R	S P M	General/Background/ not in MSA	10/9/1991	temp. closed	U	C	Y	Being relocated
Duncanville, Tuscaloosa	Tuscaloosa	01-125-0010	11690 Southfork Dr. Duncanville, Al	33.08953	-87.45972	U	S	Population Exposure/ Tuscaloosa MSA	2/1/2001	active	U	C	Y	
Sand Mountain	Dekalb	01-049-9991	Sand Mountain Agricultural Exper. Station Crossville, AL	34.2888	-85.9698	R	C A S	Highest Concentration/ Fort Payne μ SA	1/1/2011	active	U	C	N	operated by EPA

JEFFERSON COUNTY DEPARTMENT OF HEALTH (JCDH)

ANNUAL AIR MONITORING NETWORK PLAN

June 2012

Regulations codified at 40 CFR Part 58, Appendices D (Network Design Criteria for Ambient Air Quality Monitoring) and E (Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring) were reviewed to determine if modifications to the existing air monitoring network are required.

Proposed Changes to the Network

- North Birmingham and Wylam PM 2.5 FRM sampling reduced to 1 in 3 day
- Speciation sampling at Wylam increasing to follow North Birmingham's 1 in 3 day alternate schedule
- Propose closing Providence and Pinson, eliminating Ozone and Continuous PM 2.5 sampling at those sites
- Adding community wide NO₂ sampling to NCore site
- Establishment of a Near-Road NO₂ monitoring site by January 2014
- Relocation of a CO monitor currently at East Thomas to this site

PAMS (Photochemical Assessment Monitoring Stations)

PAMS monitoring is required in areas classified as serious or above for the 8-hour ozone standard. Jefferson/Shelby Counties are presently classified as an ozone attainment area. Therefore, PAMS monitoring is not required.

NCore Ambient Air Monitoring Stations

Each State is required to operate one NCore (multi-pollutant site). After much discussion with EPA, North Birmingham was selected as the NCore site due to the STN Speciation and IMPROVE samplers already located at the site among other reasons. This site became operational on January 1, 2011. The site monitors continuous Ozone (O₃), trace level carbon monoxide (CO), trace level sulfur dioxide (SO₂), and trace level oxides of nitrogen including nitric acid (NO_y), as well as fine (PM_{2.5}) particles, coarse (PM_{10-2.5}) particles, PM₁₀ particles, PM₁₀ lead.

School Air Toxics Program

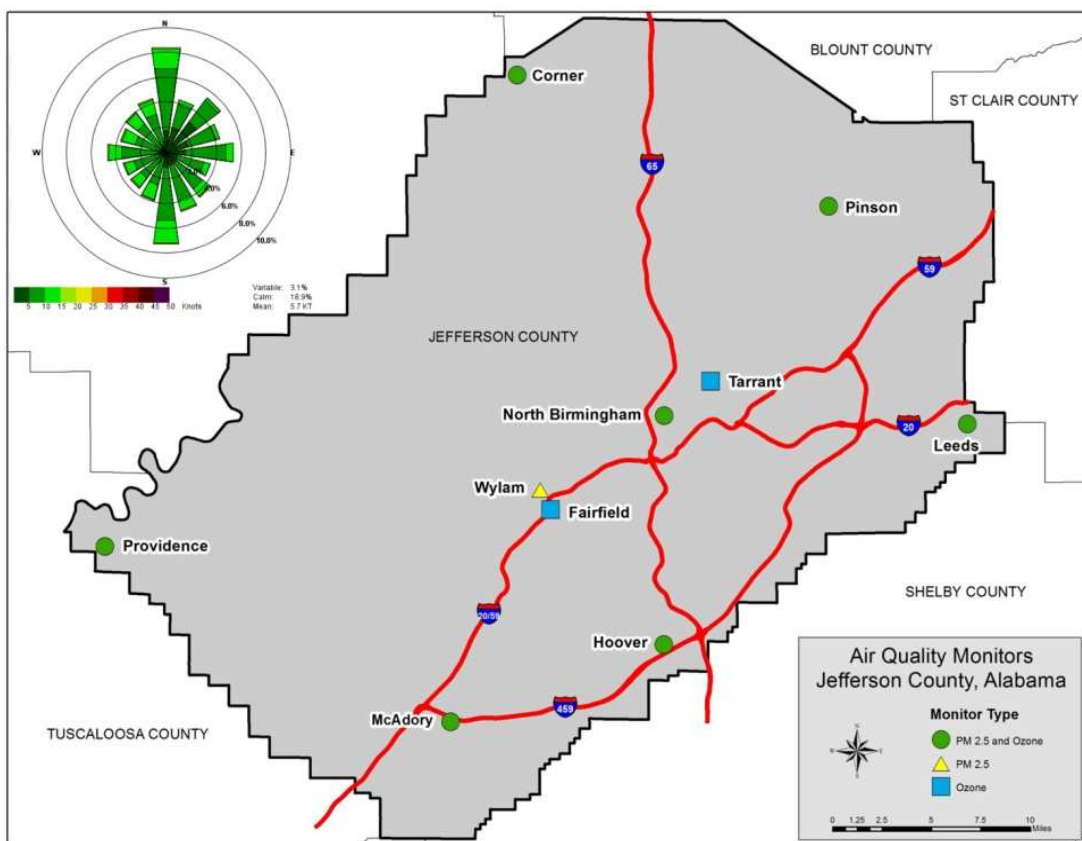
An air toxics monitoring study, referred to as the School Air Toxics Program, was conducted in 2009-2010, but was inconclusive regarding potential for health effects. As a result, in February 2011 EPA proposed to conduct continuation of the initial monitoring with a one-year monitoring study to obtain data for further evaluation of potential impacts to communities in the North Birmingham area. The additional sampling began in June of 2011 and is being conducted by EPA contractor MacTec. In the earlier studies, samples for VOCs, PAHs, PM10 Metals, and TSP Metals were taken every six days over the sampling period. The additional monitoring is being conducted for VOCs, polycyclic aromatic hydrocarbons (PAHs), metals, and PM10 lead. Following the collection and analysis of data, a human health risk assessment will be conducted to determine potential chemical exposures to the community. The results of this assessment will be compared with those of previous air toxics monitoring studies and will assist in the development of possible management strategies to reduce air toxics in the North Birmingham area.

SLAMS (State and Local Air Monitoring Stations)

Ozone

The minimum ozone monitoring requirements are based on MSA (Metropolitan Statistical Area) populations and 3-year design value concentrations. The Birmingham MSA population is 1,132,264 based on the 2011 estimated U.S. census population. The Birmingham MSA's 3-year design value concentration for 2009-2011 is .075 ppm. MSA's with populations greater than 1,000,000 having a design value $\geq 85\%$ of the O₃ NAAQS are required to operate two ozone sites. For the purpose of AirNow mapping and to support the EMPACT website, Jefferson County operates a total of nine ozone monitoring sites, and a tenth ozone monitoring site in the Birmingham MSA is located at Shelby County's Helena site (operated by the Alabama Department of Environmental Management).

JCDH is proposing to eliminate Ozone monitoring at two sites: Providence and Pinson. Providence was put in place originally to determine background ozone values for the county. However, when looking at 30 year climatology encompassing the years 1982 through 2011 from the National Weather Service station at the Birmingham International Airport, it shows the predominate wind direction is from the North. Therefore, the Corner site is more representative of background ozone coming into the county.



The Pinson site is in close proximity to the Corner site and design values have been similar to Corner. For this reason we feel it is redundant sampling.

Ozone 8-hour Design Values	2009-2011
Fairfield	0.070
Tarrant	0.074
Pinson	0.070
McAdory	0.075
Hoover	0.075
Providence	0.070
Corner	0.070
N. Bham	0.071
Leeds	0.071
Helena	0.072

SO₂

Based on the current SO₂ regulations the Birmingham-Hoover CBSA will require 2 SO₂ monitors. JDCH has two sites at North Birmingham, the NCore site (AQS ID 01-073-0023) and at Fairfield (AQS ID 01-073-1003).

CO

Jefferson County operates four CO monitors even though concentrations continue to be low. One CO monitor will be required to operate collocated with the one required near-road NO₂ monitor by January 1, 2014. Jefferson County plans once this is established to relocate the CO monitor currently at East Thomas (AQS ID 01-073-0028) to this new site to meet the new monitoring requirements.

NO₂

A revised NAAQS for Nitrogen Dioxide was promulgated in February 2010. In this rule, EPA required changes to the monitoring network that will focus monitoring resources to capture short-term NO₂ concentrations near heavily trafficked roads, to assess area-wide (or community-wide) NO₂ concentrations, and to assess NO₂ concentrations for vulnerable and susceptible populations. Jefferson County will be required to have two NO₂ monitors, one to address community-wide NO₂ and one to address near road concentrations. The community-wide monitor will be located at the North Birmingham NCore site. The establishment of a permanent near-road NO₂ monitoring site will meet design and siting criteria as spelled out in 40 CFR Part 58. Even though funding has not been issued for this monitoring, Jefferson County's meteorologist and engineers are currently researching appropriate sites using the technical assistance document and should have several sites identified by mid-summer.

NO_y monitoring began at the NCore site January 1, 2011.

Lead

According to the new lead regulations, sources emitting a half ton or more of lead per year would be candidates for lead ambient air monitoring. There are no longer any significant point sources of lead emissions greater than the half ton threshold in Jefferson County. Therefore, based on past monitoring and 2010 emissions inventory data, a lead source monitoring site is not required. Pb monitoring is required at any NCore site in each CBSA with a population equal to or greater than 500,000 people. Lead PM₁₀ monitoring is occurring at the NCORE (North Birmingham AQS ID 01-073-0023) site and has been collecting data since 12-29-2011.

PM₁₀

Based on MSA's with populations greater than 1,000,000 and high concentrations (greater than 80 percent of PM₁₀ NAAQS), Jefferson County is required to operate between 6 and 10 sites. Jefferson County operates nine PM₁₀ sites located in the main industrial valley. These monitors can be operated at very low cost and provide good spatial coverage within the county. Experience has shown that members of the public want ambient air monitoring to be performed in their part of the county, and the PM₁₀ monitoring sites provide a monitoring presence at relatively low cost. Furthermore, the PM₁₀ data provide an indirect indication of PM_{2.5} spatial variability at a tiny fraction of the cost of operating additional PM_{2.5} sites. Four of the PM₁₀ sites have continuous PM₁₀ monitors and are collocated with manual PM₁₀ monitors which run every six days for quality assurance purposes.

PM_{2.5}

The minimum PM_{2.5} monitoring requirements are based on MSA populations and 3-year design value concentrations. Birmingham MSA's 3-year annual design value concentration for 2009-2011 is 12.9 µg/m³. MSA's with populations greater than 1,000,000 having a design value ≥ 85% of the PM_{2.5} NAAQS are required to operate three PM_{2.5} sites. Although Jefferson County is only required to operate three PM_{2.5} monitoring sites, four PM_{2.5} monitoring sites are actually operated. Three sites (North Birmingham, Wylam and McAdory) operate on a 1 in 3 day schedule. The Leeds site operates on a 1 in 6 day schedule. While the North Birmingham site is the only required collocated site for manual PM_{2.5}, all four of the manual PM_{2.5} monitoring sites are collocated on a 1 in 6 day schedule. Also ADEM operates at site in Shelby county (Pelham).

Continuous PM_{2.5} SPM (Special Purpose Monitors)

Continuous PM_{2.5} monitoring is required in relation to the minimum SLAMS monitoring requirement stated above; i.e., equal to at least one-half (round up) the minimum monitoring requirement. Jefferson County is required to operate two continuous PM_{2.5} monitors. However, eight continuous PM_{2.5} monitors are actually operated in Jefferson County for the purpose of AirNow mapping and to support our EMPACT website. Continuous PM_{2.5} monitors are collocated with manual PM_{2.5} monitors for quality assurance purposes.

Due to budget constraints, Jefferson County is proposing to eliminate the Pinson and Providence sites. This will leave 6 remaining sites to support the AirNow and EMPACT websites.

Eliminating these two sites will allow us to focus resources on new monitoring efforts at NCore and the up-coming NO₂ near road monitoring.

Manual PM_{2.5} STN Speciation Monitors and Supplemental Speciation

Based on current and past trends in metal speciation, Jefferson County is proposing to increase speciation sampling at the Wylam site from a 1 in 6 day sampling frequency to a 1 in 3 day alternate schedule. This coincides with North Birmingham's speciation sampling schedule. The increased sampling will allow the Air and Radiation Protection Division to have comparable data sets from both sites and enable better assessments of current and future trends.

Network Review Findings

The existing network as summarized in the attached Air Monitoring Network Description complies with 40 CFR Part 58 requirements. The described network should adequately characterize typical population exposure concentrations and compliance status with the NAAQS for pollutants of concern.

The monitoring site location map can be found in appendix A.

JCDH AIR MONITORING NETWORK DESCRIPTION

(As of June 2012)

Ozone

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-6002	Jefferson	Tarrant Elem. School	33D34M25S	86D46M12S	3/24/80	High Pop. Exposure	Neighborhood	Continuously March-October
01-073-5002	Jefferson	Pinson Elem. School	33D42M10S	86D40M00S	7/21/80	High Conc.	Urban	Continuously March-October
01-073-1003	Jefferson	Fairfield, PFD	33D29M05S	86D54M30S	4/26/74	High Pop. Exposure	Neighborhood	Continuously March-October
01-073-1005	Jefferson	McAdory School	33D19M30S	87D00M06S	6/17/87	High Conc.	Urban	Continuously March-October
01-073-2006	Jefferson	Hoover, GVBC	33D23M23S	86D48M00S	9/1/88	High Pop. Exposure	Neighborhood	Continuously March-October
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	3/1/00	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-5003	Jefferson	Corner School	33D48M05S	86D56M33S	3/1/00	Typical Pop.	Urban	Continuously March-October
01-073-1009	Jefferson	Providence	33D27M30S	87D18M16S	3/1/00	Background	Urban	Continuously March-October
01-073-1010	Jefferson	Leeds Elem. School	33D32M37S	86D32M55S	3/1/01	High Pop. Exposure	Neighborhood	Continuously March-October

Carbon Monoxide

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0028	Jefferson	East Thomas, Finley Ave.	33D33M25S	86D43M12S	3/1/81	High Pop. Exposure	Micro	Continuously Year-round
01-073-1003	Jefferson	Fairfield, PFD	33D29M05S	86D54M30S	12/11/74	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-6004	Jefferson	N. B'ham, Sloss	33D33M04S	86D48M56S	9/25/96	High Conc.	Neighborhood	Continuously Year-round
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/11	High Pop. Exposure	Neighborhood	Continuously Year-round

Sulfur Dioxide

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-1003	Jefferson	Fairfield, PFD	33D29M05S	86D54M30S	12/11/74	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/11	High Pop. Exposure	Neighborhood	Continuously Year-round

NO_y

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/11	High Pop. Exposure	Neighborhood	Continuously Year-round

Manual PM₁₀ Hi-Vol

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-1010	Jefferson	Leeds Elem. School	33D32M37S	86D32M55S	4/1/87	Typical Pop.	Neighborhood	1/6 Days
01-073-6002	Jefferson	Tarrant Elem. School	33D34M25S	86D46M12S	12/10/86	High Pop. Exposure	Neighborhood	1/6 Days
01-073-0034	Jefferson	Northside School	E517.798	N3709.619	1/10/89	High Conc.	Neighborhood	1/6 Days
01-073-0034	Jefferson	Northside School	E517.798	N3709.619	1/10/89	Collocated Sampler	Neighborhood	1/6 Days
01-073-1003	Jefferson	Fairfield, PFD	33D29M05S	86D54M30S	7/1/94	High Pop. Exposure	Neighborhood	1/6 Days

Manual PM10 Lo-Vol for PMCourse Determination

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/03	High Conc.	Neighborhood	1/6 Days
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/03	Collocated Sampler	Neighborhood	1/6 Days
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	1/1/03	High Pop. Exposure	Neighborhood	1/6 Days
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	1/1/03	Collocated Sampler	Neighborhood	1/6 Days
01-073-1005	Jefferson	McAdory School	33D19M30S	87D00M06S	1/1/03	Typical Pop.	Neighborhood	1/6 Days
01-073-1010	Jefferson	Leeds Elem. School	33D32M37S	86D32M55S	1/1/04	Typical Pop.	Neighborhood	1/6 Days

Manual PM10 Improve Monitor

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	4/21/04	High Conc.	Neighborhood	1/3 Days

Continuous PM10

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/27/93	High Conc.	Neighborhood	Continuously Year-round
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	10/8/93	High Conc.	Neighborhood	Continuously Year-round
01-073-6002	Jefferson	Tarrant Elem. School	33D34M25S	86D46M12S	12/10/86	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-6004	Jefferson	N. B'ham, Sloss	33D33M04S	86D48M56S	1/24/96	Point Source	Neighborhood	Continuously Year-round

Manual PM_{2.5}

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/99	High Conc.	Neighborhood	Daily
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/99	Collocated Sampler	Neighborhood	1/6 Days
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	1/1/99	High Pop. Exposure	Neighborhood	Daily
01-073-1005	Jefferson	McAdory School	33D19M30S	87D00M06S	1/1/99	Typical Pop.	Neighborhood	1/3 Days
01-073-1010	Jefferson	Leeds Elem. School	33D32M37S	86D32M55S	1/1/04	Typical Pop.	Neighborhood	1/6 Days

Continuous PM2.5

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	7/12/01	High Conc.	Neighborhood	Continuously Year-round
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	2/25/05	High Conc.	Neighborhood	Continuously Year-round
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	7/13/01	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-5002	Jefferson	Pinson High School	33D42M10S	86D40M00S	7/19/01	Typical Pop.	Urban	Continuously Year-round
01-073-2006	Jefferson	Hoover, GVBC	33D23M23S	86D48M00S	7/25/01	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-1005	Jefferson	McAdory School	33D19M30S	87D00M06S	7/16/01	Typical Pop.	Neighborhood	Continuously Year-round
01-073-5003	Jefferson	Corner School	33D48M05S	86D56M33S	7/22/01	Typical Pop.	Urban	Continuously Year-round
01-073-1009	Jefferson	Providence	33D27M30S	87D18M16S	7/19/01	Background	Urban	Continuously Year-round
01-073-1010	Jefferson	Leeds Elem. School	33D32M37S	86D32M55S	1/1/04	Typical Pop.	Neighborhood	Continuously Year-round

Manual PM2.5 STN Speciation Monitors

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	1/1/01	High Conc.	Neighborhood	1/3 Days
01-073-2003	Jefferson	Wylam, Jersey St.	33D29M59S	86D55M27S	10/1/01	High Pop. Exposure	Neighborhood	1/6 Days

Manual PM2.5 Improve Speciation Monitor

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	4/21/04	High Conc.	Neighborhood	1/3 Days

RadNet Monitor

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33D33M04S	86D48M56S	4/19/07	High Conc.	Neighborhood	Continuously Year-round

HUNTSVILLE ANNUAL AIR MONITORING NETWORK PLAN

May 17, 2012

Regulations codified at 40 CFR Part 58, Appendices A (Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring), C (Ambient Air Quality Monitoring Methodology), D (Network Design Criteria for Ambient Air Quality Monitoring) and E (Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring) were reviewed to determine if modifications to the existing air monitoring network are required.

NCore Ambient Air Monitoring Stations

Each State is required to operate one NCore site (multipollutant). Huntsville was not selected for the NCore site.

PAMS (Photochemical Assessment Monitoring Stations)

PAMS monitoring is required in areas classified as serious, severe, or extreme for the 8-hour ozone standard. Huntsville is presently classified as an ozone attainment area. Consequently, PAMS monitoring is not required.

SLAMS (State and Local Air Monitoring Stations)

The minimum ozone monitoring requirements are based on MSA (Metropolitan Statistical Area) populations and 3-year design value concentrations. The Huntsville MSA population is 417,593 based on the 2010 decennial census population. Huntsville's 3-year design value concentration for 2009-2011 is .070 ppm. MSA's with populations of 50,000 to less than 350,000 having a design value $\geq 85\%$ of the O₃ NAAQS are required to operate one ozone site. MSA's with populations of 350,000 to less than 4,000,000 are required to operate two ozone sites. Huntsville operates two ozone monitoring sites, as required.

There is a two-tier minimum nitrogen dioxide (NO₂) monitoring requirement. Near-road microscale monitoring is required in each CBSA (Core-based statistical area) with a population of 500,000 or more. Area-wide high concentration monitoring is required in each CBSA with a population of 1,000,000 or more. The Huntsville CBSA population is 417,593. Huntsville is not required to operate a SLAMS NO₂ monitor.

The minimum monitoring requirements for carbon monoxide (CO) require one monitor be collocated with a near-road NO₂ monitor in each CBSA with a population of 1,000,000 or more. Huntsville is not required to operate a SLAMS CO monitor.

The minimum sulfur dioxide (SO₂) monitoring requirements are based on a Population Weighted Emissions Index (PWEI), which is calculated by multiplying the population of the CBSA and the total SO₂ emissions (using the most recent published version of the National Emissions Inventory) within the CBSA area. The resulting product is then divided by one million, representing million persons-tons per year. Areas having a PWEI greater than 1,000,000 are required to operate 3 monitors; areas having a PWEI equal to or greater than 100,000 but less than 1,000,000 are required to operate 2 monitors; areas having a PWEI greater than 5,000 but less than 100,000 are required to operate 1 monitor. The Huntsville PWEI is 2474 (based on 2008 estimated census population and 2008 National Emissions Inventory). Huntsville is not required to operate a SLAMS SO₂ monitor.

Lead monitoring (Pb) is required in areas where Pb levels have been shown or are expected to be of concern due to the proximity of Pb point source emissions. Generally, industrial sources emitting 0.5 ton or more of lead per year and airports emitting 1.0 ton or more per year would be candidates for lead ambient air monitoring. There are no significant point sources of lead emissions in Huntsville. Based on past monitoring and emissions inventory data, a SLAMS lead site is not required.

Huntsville's PM₁₀ concentrations are less than 80 percent of the PM₁₀ NAAQS (National Ambient Air Quality Standards). Based on Huntsville's MSA population being between 250,000-500,000 and low concentrations, Huntsville is required to operate between 0 and 1 site. Huntsville operates 3 PM₁₀ sites located south, central, and north within Huntsville. These monitors can be operated at very low cost and provide good spatial coverage within the city. Experience has shown that members of the public want ambient air monitoring to be performed in their part of the city, and the PM₁₀ monitoring sites provide a monitoring presence at relatively low cost. Furthermore, the PM₁₀ data provide an indirect indication of PM_{2.5} spatial variability at a tiny fraction of the cost of operating multiple PM_{2.5} sites. Note: PM₁₀ Site 01-089-0004 will be terminated upon projected closure of Fire Station #7, if an alternate site cannot be found.

The minimum PM_{2.5} monitoring requirements are based on MSA populations and 3-year 24-hour design value concentrations. Huntsville's 24-hour 3-year design value concentration for 2009-2011 is 22 µg/m³. MSA's with populations of 50,000 to less than 500,000 having a design value ≥ 85% of the PM_{2.5} NAAQS are required to operate one PM_{2.5} site on a 1 in 3 day sampling frequency. Huntsville is required to operate one PM_{2.5} monitoring site. Note: Operating frequency increases to daily sampling when the design value is within ± 5 percent of the 24-hour PM_{2.5} NAAQS (34, 35, and 36 µg/m³). Huntsville is required to operate on a 1 in 3 day schedule.

SLAMS sites were also evaluated to determine consistency of spatial scales with stated monitoring objectives. Reference the attached monitoring network description. In addition to the information listed below, the description also indicates site locations, monitoring methodologies, and operational schedules.

<u>Site</u>	<u>Pollutant</u>	<u>Monitoring Objective</u>	<u>Current Spatial Scale Based on ADT* For nearest Streets</u>	<u>Scale Meets Objective Yes / No</u>
0002	PM ₁₀	Population	Neighborhood	Yes
0004	PM ₁₀	High Conc.	Middle	Yes
0014	PM ₁₀	Population	Urban	Yes
0014	PM _{2.5}	Population	Urban	Yes
0014	O ₃	Population	Neighborhood	Yes
0022	O ₃	High Conc.	Urban	Yes

Notes:

ADT = Average Daily Traffic

Site 0002 Monitor 30.5 m from Pulaski Pike ADT 14,600 Probe Ht. 4.3 m

Site 0004 Monitor 30.5 m from Mem. Pkwy. ADT 37,000 Probe Ht. 4.3 m

Site 0014 Monitors 91 m from Airport Road ADT 13,600 Probe Ht of PM monitors – 4.3 m
Monitors 548 m from Mem. Pkwy. ADT 82,650** Probe Ht of continuous

monitor(s) 4.5 m

Site 0022 Monitor 30 m from Capshaw Road ADT 11,000 Probe Ht. 4.0 m

SPM (Special Purpose Monitors)

The special purpose PM₁₀ monitor is operated Monday – Friday from 3:00 – 3:00 p.m. This data is used in reporting the daily Air Quality Index to the local print and television media.

Continuous PM_{2.5} monitoring is required in relation to the minimum SLAMS monitoring requirement stated above; i.e., equal to at least one-half (round up) the minimum monitoring requirement. Huntsville is therefore required to operate one continuous PM_{2.5} monitor. This data is used to support public reporting and forecasting of the Air Quality Index.

<u>Site</u>	<u>Pollutant</u>	<u>Monitoring Objective</u>	<u>Current Spatial Scale Based on ADT* For nearest Streets</u>	<u>Scale Meet Objective Yes / No</u>
0003 (AQI Reporting Site.)	PM ₁₀	Population	Neighborhood	Yes
0014	PM _{2.5}	Population	Urban	Yes

*Traffic count data as provided by the Engineering Department represents 2010-2011 data.

**ADT counts on Memorial Parkway immediately north and south of Airport Road averaged.

Network Review Findings

The existing network as summarized in the attached Air Monitoring Network Description complies with 40 CFR Part 58 requirements.

Attachments

1. Air Monitoring Network Description
2. Monitoring site location map.
3. Air Monitoring Equipment Assessment

AIR MONITORING NETWORK DESCRIPTION

(As of May 2012)

Site ID	Pollutant(s) Monitored	Methodology	Operating Schedule	Monitoring Objective	Spatial Scale	MSA Represented	Site/Monitor Type	Begin Sampling	End Sampling
01-089-0002	PM10*	SSI Hi – Vol	6 – Day	Population	Neighborhood	Huntsville	SLAMS	01/01/91	Active
01-089-0003	PM10	SSI Hi – Vol	Weekday	Population	Neighborhood	Huntsville	SPM	04/01/93	Active
01-089-0004	PM10*	SSI Hi – Vol	6 – Day	High Conc.	Middle	Huntsville	SLAMS	06/28/90	Active
01-089-0014	PM10*	SSI Hi – Vol	6 – Day	Population	Urban	Huntsville	SLAMS	07/01/88	Active
	PM2.5*	SSI Lo – Vol	3 -- Day	Population	Urban	Huntsville	SLAMS	01/01/99	Active
	PM2.5	SSI Lo – Vol	6 – Day	Population	Urban	Huntsville	Supplemental Speciation	01/09/03	Active
	PM2.5	SSI Lo – Vol	Continuous	Population	Urban	Huntsville	SPM	10/09/03	Active
	Ozone*	UV Photometric	Continuous	Population	Neighborhood	Huntsville	SLAMS	01/01/75	Active
01-089-0022	Ozone*	UV Photometric	Continuous	High Conc.	Urban	Huntsville	SLAMS	07/01/11	Active

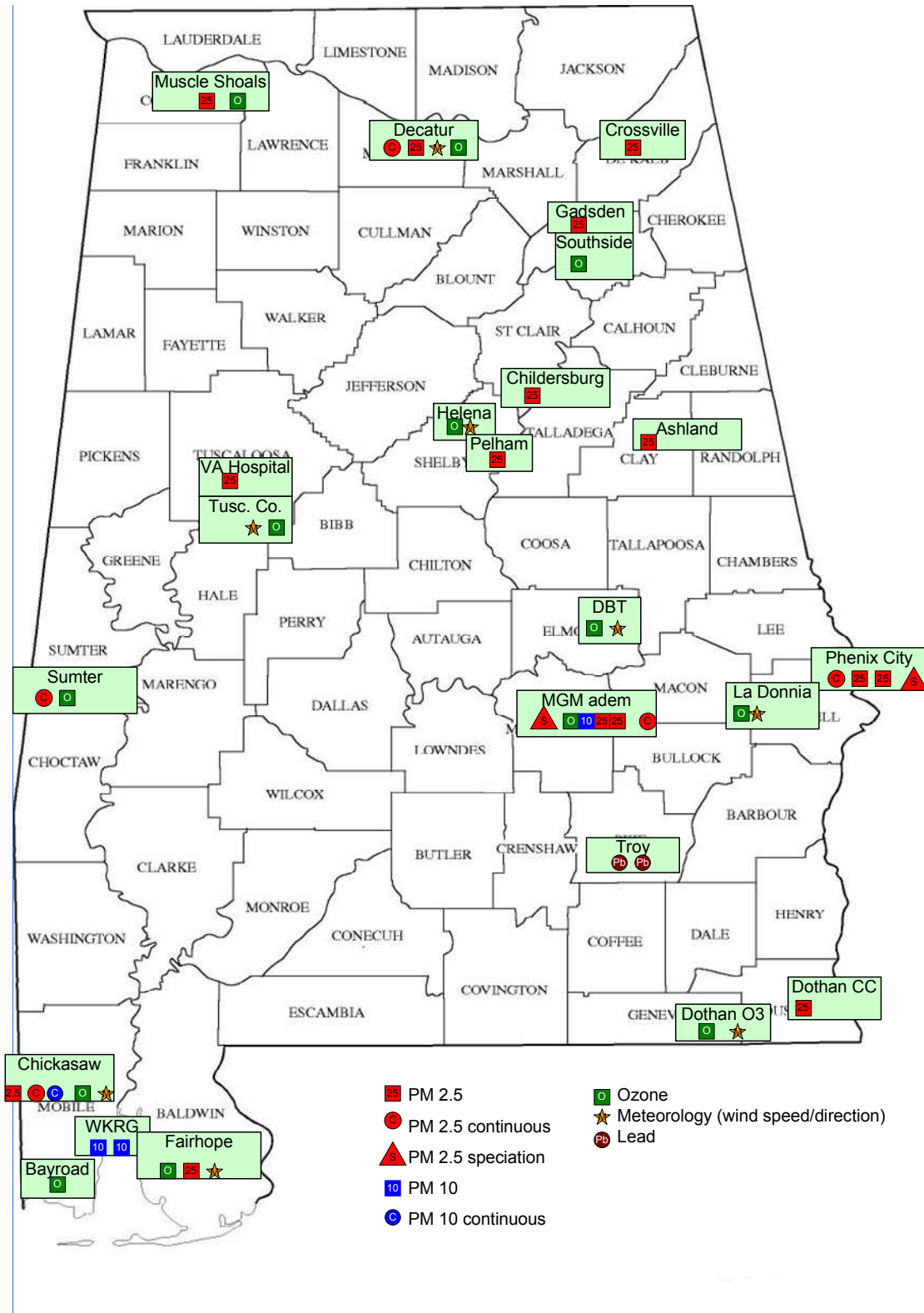
*Sites used for NAAQS comparison.

Site ID	Location	Geographical Coordinate	Three Closest Roads	Proposed Changes
01-089-0002	5006 Pulaski Pike Huntsville, AL 35810	Latitude +34.788333 Longitude -86.616111	Pulaski Pike Stag Run Winchester Road	None Proposed
01-089-0003	Madison St. – Garage Huntsville, AL 35801	Latitude +34.728740 Longitude -86.585010	Madison Street Gates Street Fountain Circle	None Proposed
01-089-0004	11525 S. Memorial Pkwy Huntsville, AL 35803	Latitude +34.620278 Longitude -86.566389	South Memorial Parkway Redstone Road Hobbs Road	Site will be closed due to projected closure of facility (TBD)
01-089-0014	Old Airport – Airport Rd. Huntsville, AL 35802	Latitude +34.687670 Longitude -86.586370	Airport Road Memorial Parkway Leeman Ferry Road	None Proposed
01-089-0022	1130 Capshaw Road Huntsville, AL 35757	Latitude +34.772727 Longitude -86.756174	Capshaw Road Wall Triana Highway Balch Road	None Proposed

APPENDIX A

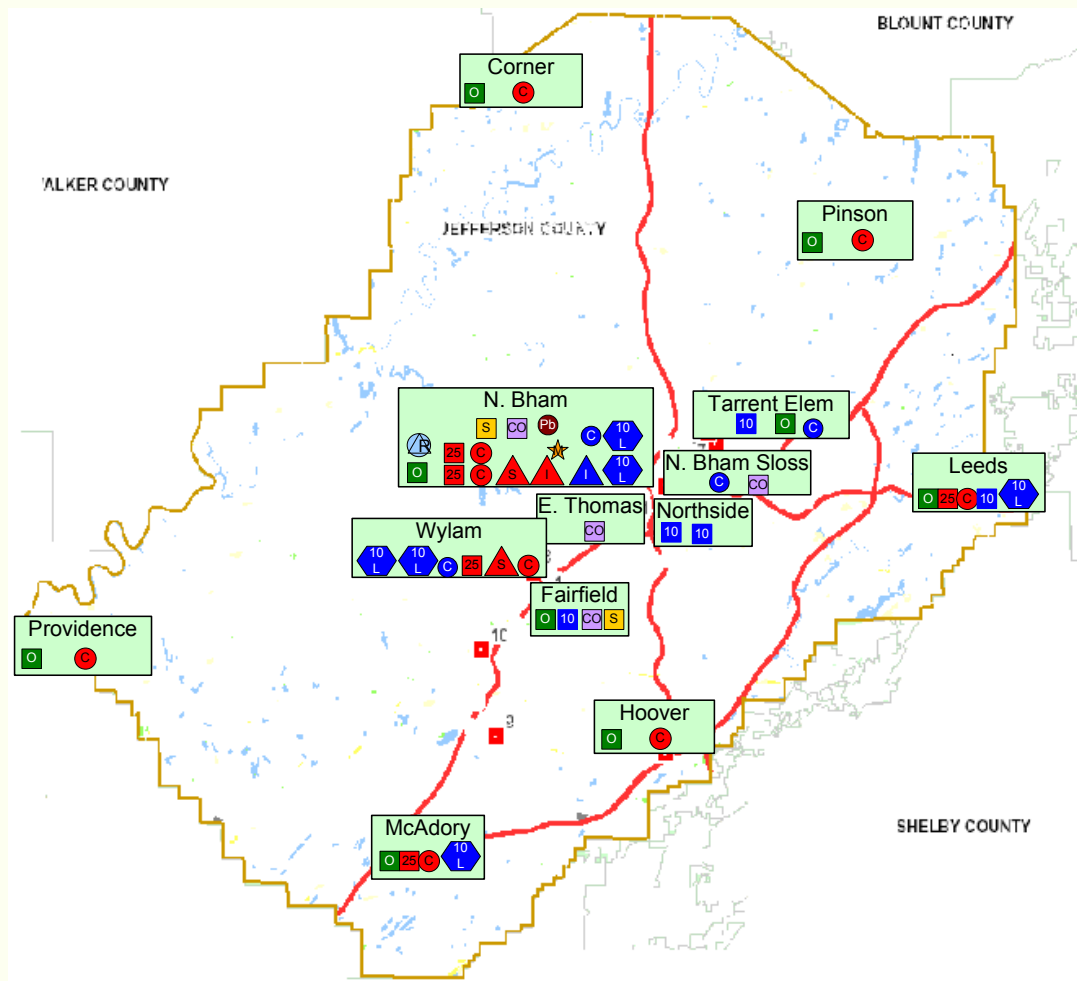
Maps

ADEM Monitoring Sites



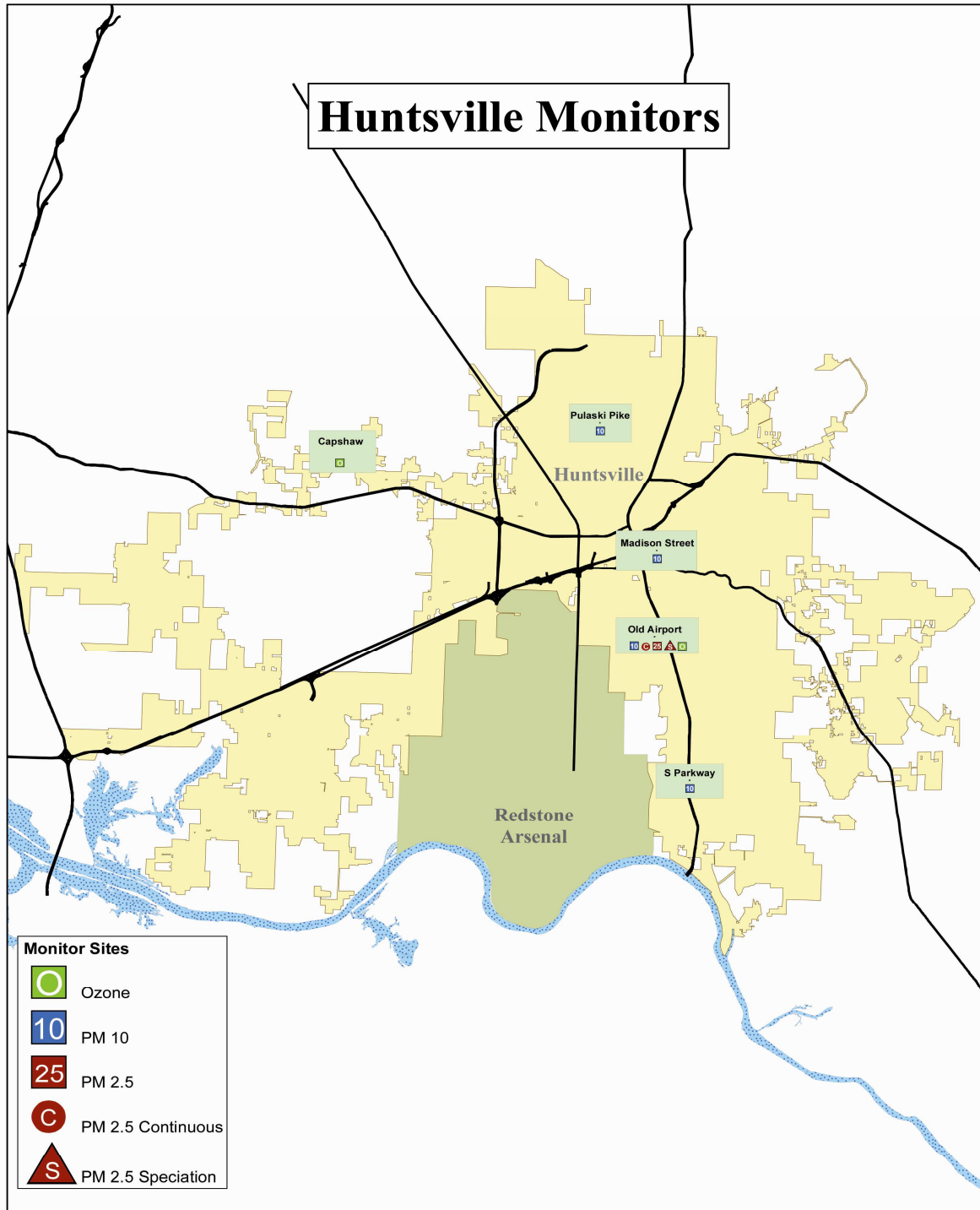
Jefferson County

Jefferson County Monitors



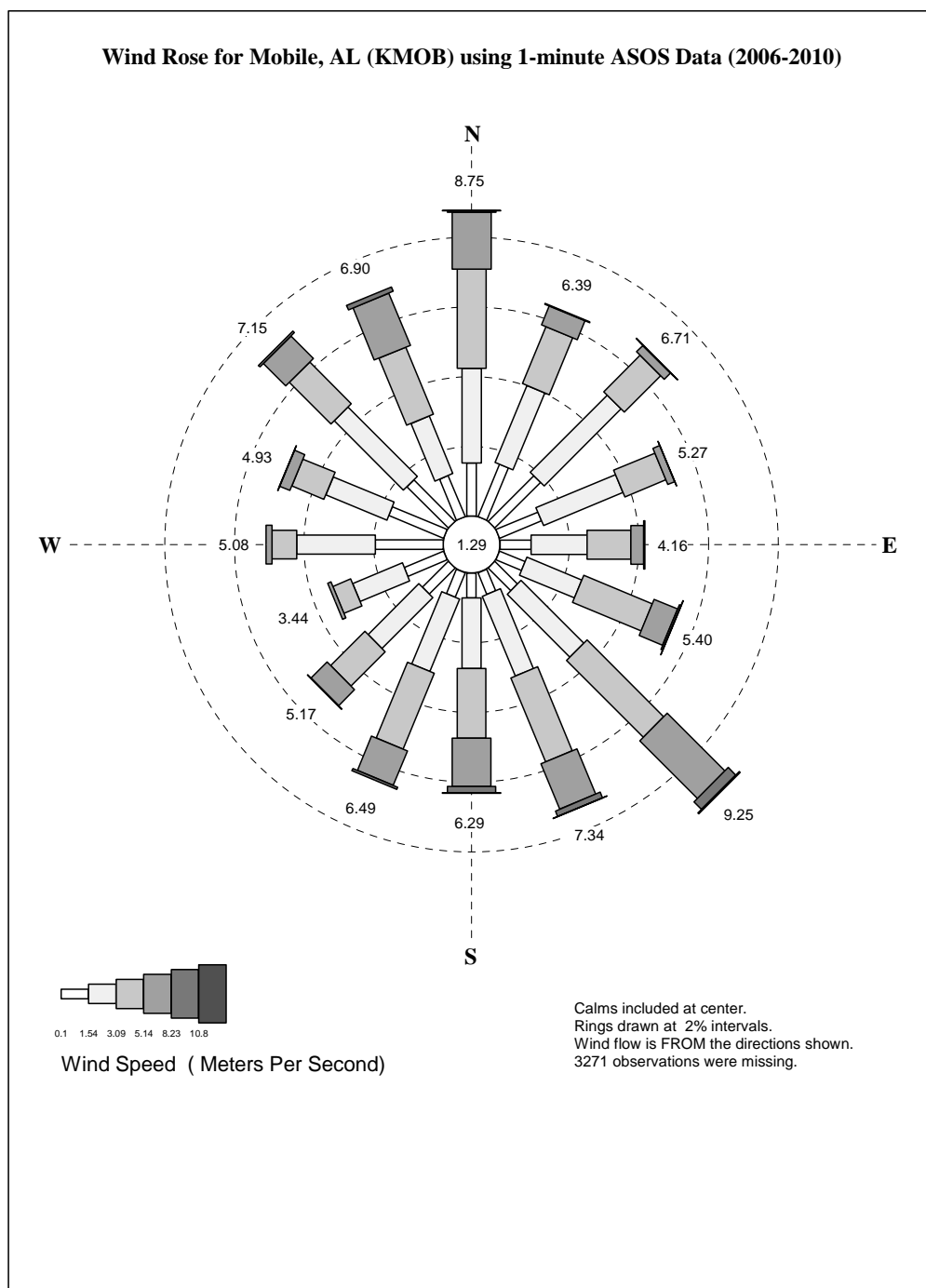
- | | |
|---------------------|------------------------------------|
| PM 2.5 | Ozone |
| PM 2.5 continuous | Meteorology (wind speed/direction) |
| PM 2.5 speciation | Lead |
| PM 10 | Sulfur Dioxide |
| PM 10 continuous | Carbon Monoxide |
| Improve speciation | Radnet |
| Low vol pm 10 | |
| Improve pm 10 spec. | |

City of Huntsville

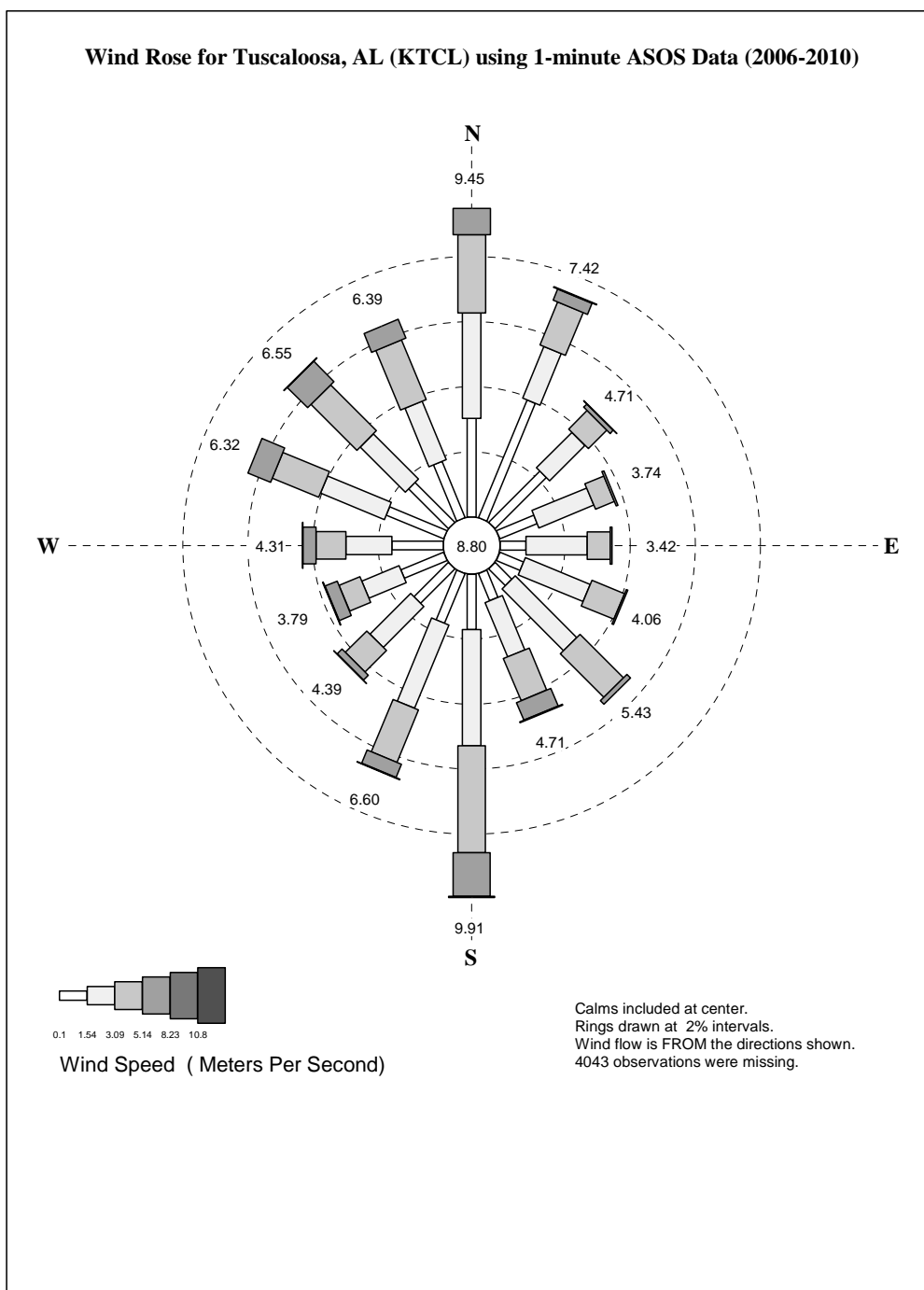


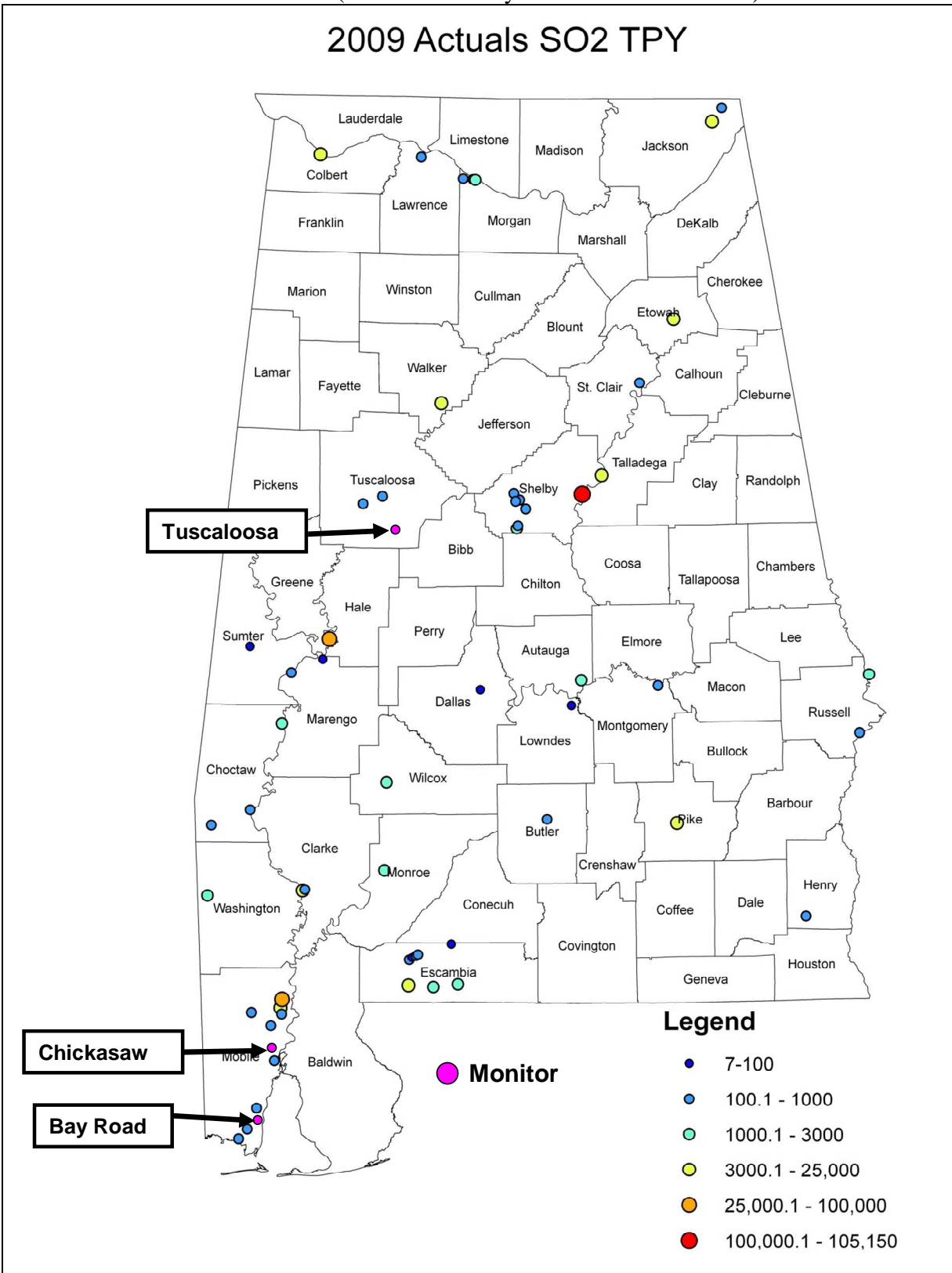
APPENDIX B

Support for ADEM SO₂ Sites

Wind Rose for Mobile, AL

Wind Rose for Tuscaloosa, AL



2009 Sources with Actuals SO₂ (Jefferson County emissions not included)

Sources with SO₂ Potentials >100 tpy (Jefferson County emissions not included)